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November, 1939

Mineral production is one of the South's most important industries; yielding out one third of the entire country's parout Sociatific on page 18.

Cover picture shows hydraulic publing of peling phosphate in Florida.



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LUNKENHEIMER Fig. 1640 FIG. CLIP WING OF CLIP VALVES!

Fig. 1640 is the original clip valve with drain channels and bronze thread bushing in bonnet.

The exterior construction clearly indicates the large drain channels; of ample size to thoroughly drain the bonnet of even fluids which tend to clog.

The bronze thread bushing cast in the bonnet has excellent wearing qualities and provides non-corrodible contact for stem.

Fig. 1640 "King-Clip" also has other important features:-

Bronze stem - perfectly aligned, with repacking seat above threads.

Extra strong stuffing box with hexagon head gland.

Bronze disc and rolled-in bronze seat rings – bronze to bronze contacts throughout which prevent corrosion.

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MANUFACTURERS RECORD

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TWICE A YEAR YOU SIT BESIDE A SECRET

It's sensitive, right there, you say.

And the dentist says, Open wide, please . . .

Beside you stands the enameled mechanical prodigy which the dentist calls his "unit."

Under that shining enamel is a secret.

The big main casting is Aluminum, for a reason many people do not connect with Aluminum.

It costs less to make it of Alcoa Aluminum!

Cheaper machining, cheaper cleaning, cheaper paint preparation, and cheaper transportation and handling, make the final cost of the part show an actual cash-money saving to this good customer of ours. And incidentally 62 pounds of weight are saved out of the former 95 pounds.

Every day more business men are revising their preconceived notions about the cost of using the many alloys of Alcoa Aluminum.

It is never costly to use Alcoa Aluminum right.

It is thrifty to use Alcoa Aluminum wisely.

Our customers are all thrifty people, and we make it our business to help them use Alcoa Aluminum wisely. Can we do the same for you? Write Aluminum Company of America, 2109 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA · ALUMINUM



THE SOUTH LEADS

A pronounced upturn in plant investments and improvements due to increasing demand is apparent. This is not alone in lines that may have felt improvement by reason of foreign needs, but by growing needs of the home market. With the repeal of the Embargo, a definite stimulus in the form of new war orders will be added, although the effect may well be less than the popular belief. Nevertheless, it is expected that during the next few weeks, new war orders will materialize, including orders for military aircraft, in the neighborhood of one billion dollars. This, of course, will be reflected in increased activity in a variety of lines.

Machinery manufacturers already report important orders for electrical equipment, pumps, boilers of the latest improved type, and a variety of modern equipment.

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It is estimated that industrial production at present is nearing the 1923-25 level, and it is clear that if the call for goods approaches the size of the 1929 market, our present capacity will not be able to meet the larger requirements of an increased population.

Railroads are placing large orders for cars and locomotives—23,000 of the former and 68 of the latter. Car loadings are at the highest point since 1930.

Shipbuilding activity is calling for mechanical equipment and supplies from every state. Airplane manufacturers are building rapidly new plants and additions to take care of a piled-up order list, and their investments run to many millions.

Steel output, always an accurate barometer, is approaching present plant capacity.

The South is benefitting in a large way from this industrial expansion. It is an accepted fact by investors of all sections that the South with its natural resources offers unparalleled advantages for industry. Southern construction contracts, as reported by the *Construction Daily Bulletin* for two months have been moving upward to the highest point for the second half of this year. The total of contracts awarded during the first ten months of this year is higher than for any similar period since 1930. Industrial construction in the South in October was nearly six times that of the same month last year, and over two and one-half times the total for the current September.

Power companies, recognizing a coming need for more electrical energy, have announced expansion plans at several strategic points. Electric power now is at an all-time peak of production, and in the South the Alabama Power Company is building a plant at Mobile that will cost \$4,000,000, with a capacity of 120,000 kilowatts. The Georgia Power Company will build a plant at Macon costing \$4,-000,000, its output to be 35,000 kilowatts initially. The Duke Power Company likewise finds new facilities necessary and is to erect an 80,000 kilowatt addition to its Buck plant at Salisbury, N. C., costing \$8,000,000. Work already has been started on the 80,000 kilowatt extension at the Cliffside plant on Broad River in Cleveland County, N. C., costing \$6,000,000. The Consolidated Gas Electric Light and Power Company of Baltimore in the closing weeks of October announced its intention to add a 67,000 horsepower unit to cost \$4,500,000 at its Westport station, where a 35,000 horsepower topping unit is well under way. Award for a \$3,000,-000 steam unit has been made by the Florida Power & Light Company for its Dania plant, and Central Power & Light Company has let initial contracts under its plan to extend its Corpus Christi, Texas,

plant. An announcement by the Virginia Public Service Generating Company states that \$2,000,000 will be spent to erect a 15,000 kilowatt plant at Alexandria, Virginia.

Important Southern steel companies are actively engaged in expanding and improving their production facilities. The Tennessee Coal, Iron & Railroad Company will build a central ore conditioning and sintering plant at Wenonah, Alabama. A new butt-weld mill involving the expenditure of \$1,-000,000 will be erected by the Wheeling Steel Corporation at its Benwood works. In Birmingham, Republic Steel Company is building a new furnace and is increasing the capacity of another at a cost of \$500,000. Between \$3,000,000 and \$4,000,-000 is being spent by Bethlehem Steel Company for three new units at its Sparrows Point, Maryland, plant, including a cold-rolled tinplate department, a continuous mill for making small pipe and a unit for coating wire by electrolysis. Another Baltimore project involving \$1,300,000 is the improvement program of the Rustless Iron & Steel Company.

The most recent announcement for an addition to the South's great paper industry, expansion of which during the last few years has involved an expenditure of hundreds of millions of dollars for plant construction, includes five new buildings with equipment to cost \$1,000,000 at the Plymouth plant of the North Carolina Pulp Company. Other additions in the same field already under construction at widely separated points on both the Atlantic and Gulf coasts include a \$3,000,000 addition to the Champion plant at Houston, Texas; a \$5,000,000 white paper plant at Mobile, Alabama, for Hollingsworth and Whitney; and a \$6,000,000 newsprint mill, the South's first, at Lufkin, Texas.

The South's mineral resources, described in an unusually comprehensive article by Dr. George C. Branner, published in this issue on page 18, are to be further developed under the plans of several nationally-known organizations. The Electro-Metallurgical Corporation, a Union Carbide and Carbon subsidiary, is now finishing its \$5,000,000 plant at Sheffield, Alabama, with recent reports that enlargement is now contemplated. Another Union Carbide and Carbon project at Charleston, West Virginia, to increase synthetic resin production is costing \$1,500,000. Tungsten concentration at Eagle Pass, Texas, is under consideration by the Molybdenum Corporation of America. Among proposals to further utilize the wealth of Southern petroleum fields are those of the Continental Oil Company, which authorized a \$1,500,000 building program at Ponca City, Oklahoma, and of the Shell Oil Company for a \$600,000 gasoline extraction plant in the Magnolia Field of Arkansas.

Southern activity in other manufacturing is well

indicated by major projects in rayon, food products, airplane, and other lines. Not the least of these is the \$3,000,000 bakery now being built at Atlanta, Georgia, by the National Biscuit Company. A \$100,000 plant for the same concern is under way at Birmingham, Alabama. Fairfield Western Maryland Dairies at Baltimore will soon start a new \$1,600,000 plant.

Nashville, Tennessee, is to get a \$1,000,000 airplane plant under the plans of the Aviation Manufacturing Corporation of New York. A thousand workers will be employed, making a substantial addition to the number already in this industry in the South. Glenn L. Martin has more than 10,000 men turning out the clippers and bombers for which the Baltimore concern is famous.

The General Electric Company has purchased 14 acres of land at Jackson, Mississippi, which is reported to be for the purpose of erecting a plant to produce the sealed-beam headlights now being used in the latest model automobiles.

The biggest rayon plant to be erected in the South is to be expanded by additional facilities to increase its present proposed capacity by 50 per cent. It is owned by the Celanese Corporation of America and is located at Pearisburg, Virginia, the same state where the Carter Fabrics Corporation, a North Carolina firm, with a large plant at Greensboro, will erect a \$1,000,000 plant for weaving rayon. The P. H. Hanes Knitting Company at Winston-Salem, N. C., is erecting a large addition, while Avondale Mills a Comer enterprise, in Alabama, is carrying out a modernization program costing \$750,000.

Two well-known rubber corporations have this year expanded in the South—Goodyear Tire & Rubber Company has started a \$150,000 warehouse addition at its tire factory at Gadsden, Alabama. This plant is one of six in the South operating as a part of the Goodyear organization. The B. F. Goodrich Company is well along on its \$1,-500,000 mechanical rubber goods plant at Clarksville, Tennessee. Selection of the site for this plant forcibly illustrates the advantages the South has to offer, not only for similar factories, but for almost all types of production. In announcing the plant, Goodrich officials emphasized that proximity to establish markets, rail and water transportation and mild climate, coupled with an abundance of raw materials entering into tire production were prime considerations. Cotton, sulphur and carbon black, all are important ingredients in compounding rubber. Goodrich uses 125,000 bales of cotton a year at its Martha mills in Georgia drawing on Louisiana and Texas for sulphur and carbon.

All of the plants cited in the foregoing with unmentioned others, are more than just buildings equipped with machinery to produce articles of everyday use. They mean the employment of thousands of workers, an increase in the South's and the nation's purchasing power, and make possible greater enjoyment of untold material and cultural advantages. Here is the true romance of industry, the creation of new wealth and opportunity, the development of a nation. All of this is made possible by the driving power of private enterprise and individual initiative, and accumulation of private capital in the hands of thousands of investors.

Lest We Forget

Col. Ralph K. Strassman, vice-president of Ward Wheelock Co. advertising agency, in a statement recently called attention to the fact that \$1,500,000,000 was spent in commercial advertising last year, and asked business to get together in a cooperative advertising movement to combat "destructive agencies now boring into the vitals of our government."

In the opinion of Col. Strassman, one-third of the amount of the annual advertising bill if used for a campaign of instructive advertising "would re-sell America to the American people and build a bulwark of public opinion—the only real safeguard against destructive outside influences."

"There is a deliberate effort," he said, "by professional malcontents who thrive on disorder and dissatisfaction to exploit their grievances against established business practices.

"I am convinced," he added, "that a change in the popular attitude toward the word 'patriotism' and what it stands for is absolutely necessary before we can hope for any united stand in constructive steps toward a united national philosophy. To many people, the word itself has come to have a derogatory connotation, to suggest narrow chauvinism, old-fashioned attitudes, lack of sophistication, something for which to apologize."

"Re-sell America to the American people" should not be necessary in a land of blessings and privileges found nowhere else on the globe, but the clamor of the crackpots has created a situation Theorists of the New Deal, professional reformers, Communists, leaders of various leagues and bunds—yes and some who like to be known as "searchers for the truth" and wouldn't know the truth if they found it—all have wanted a front seat in the performance of making over America. The air has been filled with sophistries about the "more abundant life" and "free social cooperation."

Sit-down strikes and slow-down strikes are tol-

erated, and our administrators are unwilling to say the law is broken.

Private enterprise—business—the mainspring of wealth creation, employment and the material advantages our people enjoy, has been anathema while the Bill of Rights has been the cloak under which advocates of almost anarchy have pursued their schemes.

There are signs of change in the public attitude of complacent tolerance toward dreamers and wild men. They have provided no depression cure; have created distrust instead of confidence, and while advocating unlimited government hand-outs denounce as Tories and robbers those who believe in individual hard work as the only road to success.

Their campaign has had an effect upon the unthinking and the unemployed.

Advertising that will re-emphasize the advantages of liberty which too many have forgotten in these latter days would do a useful work.

United Effort

It is fitting to note the work of a group of eleven Southern Governors, acting in a unit as the Southern Governors' Conference to promote on sound, broad lines, the industrial development of the South. Partisanship, politics, and selfish local interest are submerged in bringing about wider knowledge of the industrial advantages of the South as a whole.

The Governors comprising the Conference are, of course, busy men, occupied with the administration of their own state affairs, and necessarily, their work as a conference can proceed only along general lines and act as a unifying influence, so that individual efforts for the South's up-building can be directed with greater effect and weight on the same target. Petty jealousies between states and political units of smaller size can have no place in a work of this kind.

The activities of the Governors' Conference in connection with the freight rate problem, which has been described as a tariff barrier operating against the profitable operation of manufacturing enterprises, and the Wage-Hour Law, which does not take into account the South's favorable climate and cheaper living conditions, have had worthwhile effect. The South should be aware of this work and appraise its value, for not only has the Southern Governors' Conference made definite progress toward these two specific objectives, but has been instrumental in giving wider publicity to the many undeveloped industrial opportunities the South has to offer.

MINERAL PRODUCTION OF THE SOUTH

T is a fact of great significance that the value of the minerals produced in the United States following 1921 was greater than the value of all minerals produced in the nation prior to that year. In much the same way, the value of the minerals produced in the South since 1924 has been greater than the value of all minerals produced in the region prior to that time. In fact, dependence

BvGEORGE C. BRANNER State Geologist Arkansas

on minerals has become so general that it is almost impossible for a member of this generation to imagine a society functioning independently of them or their products.

This has been due largely to the steadily increasing use of metal machinery, mineral fuels, metal and non-metal mineral products in nearly all types of construction, and to the increasing use of the products of chemical manufacturing. It is estimated, for example, that the fuel minerals consumed by power generating machinery today provide 90 per cent of the national power requirements, water power providing the remaining ten per cent.

From any point of view, the subject of mineral production within the South is a large and complex one. Factors which permit production on a profitable basis within this area are many and varied. They include price, competition, credit, insurance rates, taxes and restrictive laws, labor conditions and the cost of transportation, in addition to the actual availability of mineral raw materials, all enter into the problem of production, profitable or otherwise.

In an article of this length it is apparent that a detailed discussion of each of these items, separately, is neither possible nor desirable and discussion will therefore be confined to the broadest aspects of the whole subject.

The word "South," of course, is variously used. The National Emergency Council, in its report to the President, "Economic Conditions of the South," (1938) considers 13 states: Howard W. Odum in his "Southern Regions of the United States," (1936) indicates that 11 states in the Southeast have basic economic unity. It is to be noted, also, that the Conference of Southern Governors, organized for the purpose of securing unit consideration of southern problems, includes the governors of 11 southern states. Nine states are common to the three groups referred to:

Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. The following seven states have been added for the purpose of this discussion: Kentucky, Maryland, Missouri, Oklahoma, Texas, Virginia, and West Virginia. The word "South," as used in this article, refers to all of these sixteen states.

The total area of the South as defined includes, in addition to one-third of the states of the Union, 969,167 square miles or 32 per cent of the area of continental United States exclusive of Alaska. In 1937 the population of the southern area included 43,992,-000 persons or 34 per cent of the population of the United States. The value in 1936 of the mineral production within the area constituted 37 per cent of the value of the entire mineral production of the United States.

The principal fact which controls the occurrence of minerals in the South as well as their character and distribution is the diversity of sedimentary rocks found there. A fact of minor importance is the occurrence of metamorphic (principally altered sedimentary) and igneous rocks. These two factors have made possible the production of 64 different mineral products in the decade 1927-1936 of which 18 may be classified as major products since their value was 97 per cent of the total. The remainder, or 46, are classified as minor products. The major products, in the order of their descending values are petroleum, coal, natural gas, clay products, natural gasoline, stone, cement, sulphur, sand and gravel, lead, zinc, phosphate rock, iron ore, lime, gypsum, salt, asphalt, bauxite.

Most of the rocks found in the South are of sedimentary origin. In the Appalachian Highlands of Georgia, South Carolina, North Carolina, and Virginia metamorphic rocks and igneous rocks occur over areas of considerable size. Metamorphic rocks also occur in a few relatively small isolated areas in Missouri, Oklahoma, and Texas, and igneous rocks are also present in a few relatively small areas in

Arkansas and Texas.

Following is an estimate of the areas of the exposures of each of the three basic rock types in the South and an estimate of the value of the mineral production obtained in each.

	Square miles	Per cent	Value of products 1927-1936 (Millions of dollars)	Per cent
Sedimentary	859,712	88.7	14,252	98
Metamorphic	76,395	7.9	158	1
Igneous	33,060	3.4	91	1
Totals	969,167	100.0	14,501	100

Well blowing-in in the Shuler field, Union County, Arkansas.

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Reprints of this article may be obtained for 15 cents each.

MINERAL PRODUCING LOCALITIES IN THE SOUTHERN STATES OF Q PETROLEUM PROD AREA
GAS
GOAL
B BAUXITE
+ PORTLAND CEMENT PLANTS
S SULPHUR
S SULPHUR
PHOSPHATE ROCK
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Figure 1.

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NOVEMBER NINETEEN THIRTY-NINE

The surface rocks of the South, from the standpoint of physical character and mineralization, may be conveniently divided into four groups which lie respectively in the four-major physiographic provinces of the South, i. e. (1) the Coastal Plain, (2) the Interior Plains, (3) the Interior Highlands, and (4) the Appalachian Highlands. (See Figure 1, page 19.)

The rocks which lie in the great lowland area of the Coastal Plain or in the southern and eastern portion of the South, sometimes referred to as the "Cotton Belt," are from Mesozoic to Cenozoic in age and are mostly unconsolidated sands, clays, and chalks with some limestones. The principal mineral products derived from these are petroleum, natural gas, clay products, natural gasoline, stone, cement, sulphur, sand and gravel, phosphate rock, lime, salt, asphalt, bauxite and iron.

For the most part, the rocks of the Interior Plains are of Paleozoic age and are usually flat-lying consolidated sedimentary rocks consisting principally of shales, sandstones, limestones and dolomites. Relatively small areas of Pre-Cambrian granites occur in Missouri, Oklahoma and Texas. The rocks of the Interior Plains produce principally petroleum, coal, natural gas, clay products, natural gasoline, stone, cement, phosphate rock, gypsum,

Using hydraulic drills, huge blocks of marble are cut and hoisted clear before being cut to size and polished. Quarry scene at the Georgia Marble Co., Tate, Georgia.





Mining bauxite in an open pit at Bauxite, Arkansas

salt, lime, sand and gravel and asphalt. The sedimentary beds of the Interior Plains have been uplifted and folded in Arkansas, Missouri and Oklahoma, thereby creating the "Interior Highlands," of the Ozark and Ouachita Mountains. These are of Paleozoic agand produce principally coal, natural gas, clay products, stone, cement, sand and gravel, lead, zinc, lime and iron.

Folded sedimentary and metamorphic rocks, together with igneous rocks of Pre-Cambrian to Paleozoic age, make up the Appalachian Highlands or the fourth major group of rocks found in the South. They produce principally petroleum, coal, natural gas, clay products, natural gasoline, stone cement, sand and gravel, zinc, iron, lime, salt, asphalt, bauxife and phosphate rock.

The approximate areas of each of these four major divisions of the rocks of the southern states and an estimate of the value of the major mineral products of each area are shown in Table 1, page 22.

Basic Questions

An attempt will be made to answer three important questions concerning mineral production in the South. These are:

- (1) What has been the mineral contribution of the South to the national economy during the decade 1927-1936?
- (2) What mineral industries have been largely responsible for the material increase in mineral production in the South since 1905?
- (3) What of the mineral reserves of the South and the future of mineral production there?

The most satisfactory answer to the first question can be obtained by analyzing the U. S. Bureau of Mines figures on mineral production. These will be reviewed from (1) the National viewpoint, (2) the Southern viewpoint, and (3) the State viewpoint.

1. The Mineral Contribution of the South From the National Viewpoint

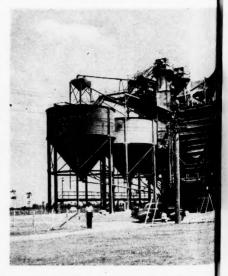
It is perhaps a fact which is not widely appreciated that the growth of the mineral industries in the South during the last 31 years was one of the important influences affecting the economic life of the nation during that period. The magnitude of this growth is illustrated by the fact that dollar value of mineral production in the South in 1936 was 6.4 times the value in 1905, an increase from \$271,329,388 to \$1,738,856,614. The percentage of the value of the national production contributed by the South in 1936 was over twice the percentage contributed in 1905, an increase from 17 per cent to 37 per cent. (See Figure 2, page 23.)

In considering the value of the fuel minerals produced in the United States during the decade 1927 to 1936 inclusive, we find the South was responsible for 48 per cent of the value of fuel minerals produced in the United States; 23 per cent of the non-metals, and 5 per cent of the metals. (See Figure 2.)

In terms of specific minerals this has meant that, of the fuel minerals produced in the nation during the ten-year period, the South produced 63 per cent of the petroleum, 56 per cent of the natural gas, 50 per cent of the natural gasoline, and 31 per cent of the coal. (See Figure 2.)

Of the non-metals, during the ten-year period referred to, the South produced 24 per cent of the nation's stone, 21 per cent of the clay products, 15 per cent of the Portland cement and 28 per cent of the value of all

A pebble phosphate washing plant in Florida where the pebbles are washed free of silt and dirt before being hauled to the dryer.



VALUE OF MINERAL PRODUCTION OF THE 16 SOUTHERN STATES

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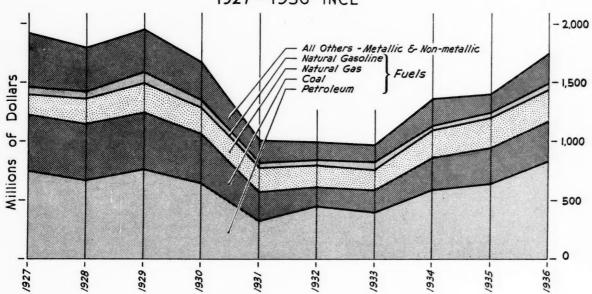
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1927 - 1936 INCL



VALUE OF METALLIC & NON-METALLIC MINERALS PRODUCED IN THE 16 SOUTHERN STATES

1927 - 1936 INCL.

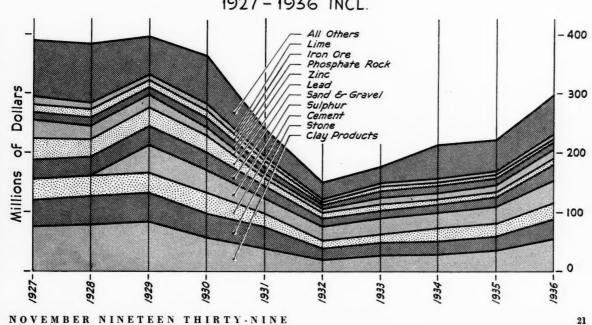


TABLE 1. AREA OF THE FOUR MAJOR PHYSICAL DIVISIONS OF THE SOUTH AND THE ESTIMATED VALUE OF MINERALS PRODUCED IN EACH DIVISION FROM 1927 to 1936

Region	Sq. miles	Per cent	Value of products 1927-1936 (Millions of dollars)	Per cent	Eighteen most valuable minerals produced. (97% of value of all minerals)
Coastal Plain	453,570	47	\$3,192	22	Petroleum, natural gas, clay products, natural gasoline, stone, cement, sulphur, sand and gravel, phosphate rock, lime, salt, asphalt, iron ore and bauxite.
Interior Plains	260,706	27	6,339	44	Petroleum, coal, natural gas, clay products, nat- ural gasoline, stone, cement, phosphate rock, gypsum, salt, lime, sand and gravel and asphalt.
Appalachian Highlands	182,203	19	4,395	30	Petroleum, coal, natural gas, clay products, nat- ural gasoline, stone, cement, sand and gravel, zinc, iron ore, lime, salt, asphalt, phosphate rock, and bauxite.
Interior Highlands	72,688	7	575	4	Coal, natural gas, clay products, stone, cement, sand and gravel, lead, zinc, lime and iron ore.
Totals	967,167	100	\$14,501	100	18 Items

other non-metallic minerals produced. (See Figure 3, page 24. Figure 2, page 23.)

Of the metals, the South produced 39 per cent of the nation's lead, 34 per cent of the zinc, 8 per cent of the iron and less than one per cent of the value of all other metallic minerals produced. (See Figure 2, page 23.)

The percentage of the value of the U. S. production of each of the 18 principal minerals produced in the South is shown in

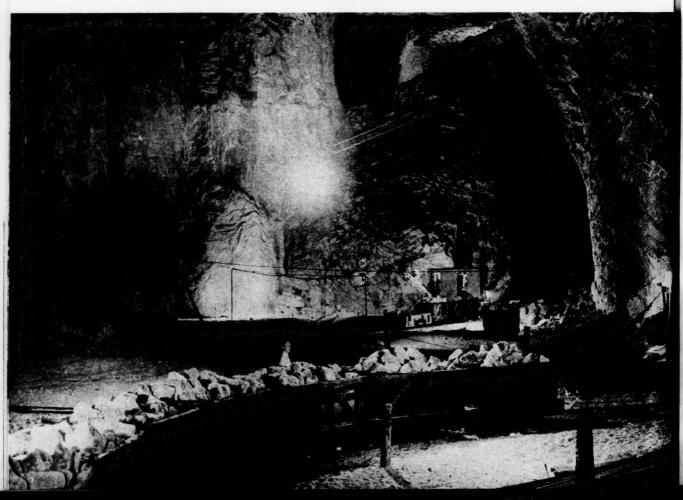
It is significant that the War Department now classifies 11 different minerals as "Strategic." Five of these, aluminum, manganese, mica, quartz crystals and quicksilver, occur in the South and are being produced there. The War Department also classifies 24 minerals as "Critical" and of these the South fluorspar, graphite, helium, iron and steel, minerals, petroleum, coal, natural gas and

lead, petroleum, phosphate, potash, refractories, sulphur and pyrites, titanium and zinc. The reserves of these 19 minerals will doubtless prove of importance to the nation in the event of an emergency.

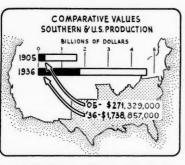
From the Southern Viewpoint

Statistics for the ten-year period 1927 to produces 14, namely, abrasives, copper, 1936 inclusive indicate that (1) the fuel

The salt mines of Louisiana, like this one at Iberia, are located in those phenomena of nature known as salt domes often extending down for great depths and not infrequently are almost pure solid salt.



VALUE OF MINERAL PRODUCTION OF 16 SOUTHERN STATES COMPARED WITH VALUE OF U.S. PRODUCTION



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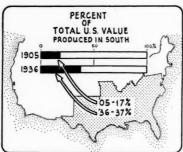
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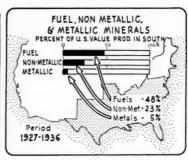
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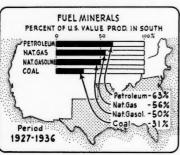
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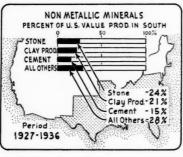
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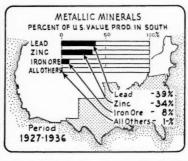


Figure 2.

natural gasoline, made up 81 per cent of the total value of all minerals produced in the South. (2) Non-metals made up 13 per cent; (3) metals, 3 per cent; with 3 per cent undistributed. The corresponding dollar values for the same period of the same items were \$11,826,807,903, \$1,842,731,050, \$432,931,845 and \$398,476,584. (See Figure 4, page 24.)

Of the fuel minerals produced in the South during the same period petroleum made up 50 per cent of the total value, coal 27 per cent, natural gas 19 per cent, and natural gasoline 4 per cent. The corresponding dollar value of these same minerals for the same period were \$5,968,339,000, \$3,177,023,603, \$2,217,639,300 and \$463,806,000. (See Figure 4.)

Of the non-metallic minerals, clay products made up 26 per cent of the total produced; stone 19 per cent, cement 14 per cent, and all others 41 per cent. The corresponding dollar values for the same period and of the same items were \$486,260,979, \$338,212,-646, \$258,383,709 and \$759,873,716. (See Figure 4.)

Of the metallic minerals, lead made up 39 per cent of the total value, zinc made up 35 per cent, iron ore made up 19 per cent and all others made up 7 per cent. The corresponding dollar values of the same minerals for the same period were \$171,345,240, \$150,795,836, \$81,694,215 and \$29,096,554. (See Figure 4.)

The value of each of the 18 principal min-

eral items produced in the South during the period 1927-1936 inclusive is shown in Figure 5, page 25.

From the State Viewpoint

The production by states of the various items for the ten-year period from 1927 to 1936 inclusive are shown in Figure 6, page 26. It is to be noted that the production of Texas, Oklahoma, West Virginia and Kentucky made up 78.5 per cent of the total value of the production of the South. Table 2, page 25 shows the total value of minerals produced by states in the 10-year period 1927-1936 and the value of the five most valuable mineral products. It is to be noted that in only two states, Georgia and Tennessee, are the percentages of the total value of the five most important minerals less than 75 per cent of the total value of all minerals produced in the state.

Facts relating to the first question raised— "What has been the mineral contribution of the South to the national economy during the decade 1927-1936?"—have been set forth in some detail. The basic facts concerning this question, which are common knowledge, may be summarized as follows:

Petroleum, natural gas and coal make up the greater part of the mineral values which have been and are being produced in the South. In addition to these, important contributions to the nation's economy are made through the production of iron, zinc, lead and aluminum, and also of limestone, phosphate, sulphur, sand and gravel, cement, stone, clay products and salt.

2. Mineral Industries Responsible for Growth

The second question—"What mineral industries have been largely responsible for the material increase in mineral production in the South since 1905?"—can be approached from a study of the changes which have taken place in the last 31 years. Table 3, page 26 tells the detailed story of the dollar value increases which have taken place. Table 4, page 27 shows the increase in dollar value by states.

A study of the items in Table 3 reveals the fact that 87.3 per cent of the increase in total value has been due to the increase in the production of the fuel minerals, petroleum, coal, natural gas and natural gasoline. Six and 4/10 per cent is due to increase in the value of the construction materials, cement, clay products, stone, sand and gravel. The increases in other items are relatively small. Table 4 tells the same story as Table 3 from the state viewpoint and indicates that 91 per cent of the increase in values has come from five states—Texas, Oklahoma, West Virginia, Louisiana and Kentucky.

The increase in petroleum, natural gas and natural gasoline production has been influenced to a considerable degree by the improvement in recent years of finding methods, geological and geophysical, by the improvement of drilling methods and machinery and by the improvement of refining processes.

3. Southern Mineral Reserves

Perhaps the third question—"What of the mineral reserves of the South and the future outlook of the mineral producing industries there?"—can be most accurately answered by studying the reserves of the more important minerals in the South. Estimates of reserves are often very difficult to make and, in the nature of the case, usually cannot be accurate. The following estimates of reserves together with the number of years such reserves may be expected to last, assuming an average annual rate of production equal to the average which took place during the period 1927-1936, are given in Table 5, page 27 for what they may be worth.

In view of the fact that, during the period 1927-1936, the value of the seven minerals listed above made up 81 per cent of the total value of the production it may be concluded that the South will continue to hold its proportionate production of the nation's minerals for many years to come, provided no basic economic changes occur within the nation. It also may be concluded that, with the adjustment of the unfavorable freight rate situation and the continued enactment of legislation favorable to industry, the proportion may be expected to increase.

Recent Developments

A few items indicating new mineral in-

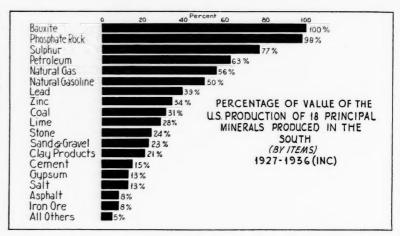


Figure 3.

dustry developments in the southern states in late years may be of interest:

Alabama: The channel of the Upper Warrior River has been deepened and the river made navigable, thus making possible the shipment of high-grade steam coal south of this river and lowering the cost at lower river points including Mobile.

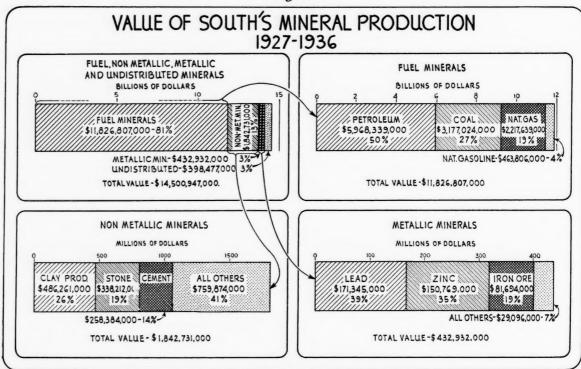
Arkansas: The finding of deep oil producing horizons in southern Arkansas has resulted in the discovery of five new oil fields since April, 1937. These new discoveries have greatly increased the known reserves of Arkansas petroleum. Florida: New dolomitic limestone quarries have been opened in Levy, Citrus and Sarasota counties.

Georgia: One whiteware plant and one pottery were recently erected at a total cost of \$600,000. Two new kaolin processing and refining plants have been erected recently, one near Sandersville and one south of Macon.

Kentucky: Rock asphalt production has been increasing in recent years.

Louisiana: The quantity of limerock produced increased greatly in 1937. A natural gasoline plant with a daily capacity of 10 mil-

Figure 4.



lion cubic feet of gas was erected in 1937 in the English Bayou oil field.

Missouri: The rock wool industry has undergone recent expansion. Dolomite is now being utilized in furnace linings.

North Carolina: The growth of the bromine industry has been an outstanding development. A plant with an annual capacity of 10,000 tons of bromine has recently been erected near Wilmington.

South Carolina: During the last few years gold mining has been revived and the Haile Gold Mine, near Kershaw, has been reopened. The gold production for the state in 1938 was \$373,500 and of this the Haile Gold Mine produced \$330,000.

Tennessee: During the last two years, brown rock phosphate deposits have been quarried extensively.

Virginia: The American Rutile Co. has erected a new plant at Roseland.

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OR

Extensive mining of "aplite" for use as a begun late in 1938.

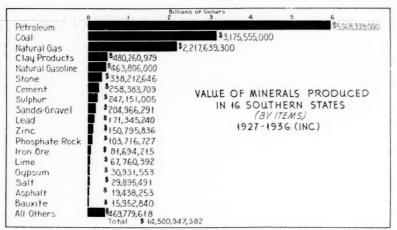


Figure 5.

ceramic flux to supplement feldspar use was

A new glass sand plant has been put into operation in Frederick County.

TABLE 2.

TOTAL VALUE OF MINERAL PRODUCTION FOR 10-YEAR PERIOD 1927-1936 IN 16
SOUTHERN STATES AND VALUE OF FIVE MOST VALUABLE PRODUCTS

State	Total value of all materials	Value of five most valuable minerals	Per cent of value of 5 most valuable minerals to per cent of total value	Five most valuable minerals and per cent of the total value of each
Alabama	\$457,057,118	\$428,590,468	94	Coal 58, iron ore 17, cement 11, clay products 4, and stone 4.
Arkansas	282,833,944	249,035,062	88	Petroleum 54, coal 15, natural gas 9, bauxite 5, and natural gasoline 5.
Florida	126,110,022	106,710,027	85	Phosphate rock 65, stone 14, sand and gravel 3, clay products 2, and fuller's earth 1.
Georgia	108,739,741	71,063,705	65	Stone 39, clay products 21, barite 2, sand and gravel 2, and fuller's earth 1.
Kentucky	1,032,631,846	978,938,286	95	Coal 69, natural gas 12, petroleum 8, clay products 4, and stone 2.
Louisiana	766,530,481	732,404,875	96	Natural gas 45, petroleum 42, natural gasoline 3, salt 3, and sulphur 3.
Maryland	131,257,053	99,375,949	76	Coal 27, clav products 22, sand and gravel 15, stone 10, and lime 2.
Mississippi	26,852,809	25,868,746	96	Natural gas 48, sand and gravel 29, clay products 19, stone 1—, and petroleum 1—.
Missouri	516,771,913	442,440,571	86	Lead 28, clay products 19, coal 15, cement 15, and stone 9.
North Carolina	74,963,743	58,387,269	78	Stone 36, clay products 26, feldspar 7, sand and gravel 6, and copper 3.
Oklahoma	3,251,733,759	3,141,603,932	97	Petroleum 73, natural gas 11, natural gasoline 7, zinc 4, and coal 2.
South Carolina	25,944,803	25,171,452	97	Stone 56, clay products 31, sand and gravel 10, gold 1—, and marl 1—.
Tennessee	287,680,298	212,322,171	74	Coal 28, stone 16, cement 15, phosphate rock 8, and clay products 7.
Texas	4,433,652,878	4,204,351,462	95	Petroleum 66, natural gas 18, sulphur 5, natural gasoline 4, and cement 2.
Virginia	315,104,421	240,622,253	76	Coal 54, stone 10, clay products 5, sand and gravel 4, and lime 3.
West Virginia	2,663,082,553	2,581,211,233	97	Coal 65, natural gas 22, clay products 5, petroleum 4, and natural gasoline 1.
Totals\$	14,500,947,382	\$13,598,097,461	94	23 Items.
NOVEMBER NI	NETEEN TH	IRTV.NINE		95

Coal mining has been extended by recent large scale operations in eastern Buchanan County.

West Virginia: Deep drilling has extended the natural gas production. The recent construction of chemical plants in the Kanawa Valley has increased the consumption there of coal, natural gas and salt brine.

Progress in the South

The National Emergency Council report on "Economic Conditions of the South" does not refer to what has been done or what is being done in the South toward the improvement of the economic conditions which have been reviewed in the report. These omissions

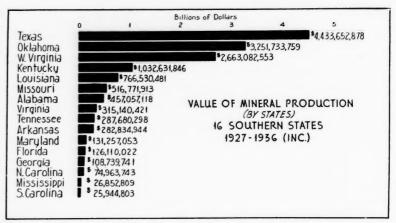


TABLE 3. INCREASES IN VALUE OF MINERALS PRODUCED IN THE SOUTH FROM 1905 TO 1936

Mineral	Value 1905	Value 1936	Increase	of total increase
Petroleum	\$26,229,429	\$790,755,000	\$764,525,571	49.9
Coal	72,204,989	339,605,000	267,400,011	17.3
Natural gas	10,314,894	275,079,000	264,764,106	17.3
Natural gasoline		43,324,000	43,324,000	2.8
Sulphur	3,706,560	35,340,200	31,633,640	2.1
Cement	162,734	27,550,086	27,387,352	1.8
Clay products	26,365,741	53,077,433	26,711,692	1.8
Stone	11,362,054	35,416,218	24,054,164	1.6
Sand and gravel	2,284,831	20,325,339	18,040,508	1.2
Zinc	1,397,592	14,830,400	13,432,808	.9
Lead		12,548,470	12,548,470	.8
All Others	52,824,751	91,005,468	38,180,717	2.5
Totals	\$206,853,5751	\$1,738,856,614	\$1,532,003,039	100.0

¹ Exclusive of coke, coal products and pig iron valued at \$64,475,813 in order to make figures comparable with 1936 value which does not include these items.

Figure 6.

tend to convey the impression that little effort is being made toward their improvement. In view of the facts, such an impression is far from justified.

Even a superficial study of the entire question of southern economic progress shows that there is not one state in the South which has not made relatively steady industrial progress during the last three decades. This applies particularly to the mineral industry. State programs have been consistently directed toward facilitating the flow of capital into the

Box car loading at sulphur vat of the Texas Gulf Sulphur Company, Newport, Texas.



southern mineral industry and have taken the form of:

(1) the search for and the discovery of

opportunities for capital investment; e. g., by inventorying mineral resources and prosecuting researches into

Per cent

sources and prosecuting researches in

TABLE 4. INCREASE IN VALUE OF MINERAL PRODUCTION IN THE SOUTH BY STATES FRFOM 1905 TO 1936

State	Value ¹ 1905	Value 1936	Increase	of total increase
Texas	\$13,429,109	\$638,732,530	\$625,303,421	40.8
Oklahoma	623,333	305,152,286	304,528,953	19.9
West Virginia	74,731,376	285,138,297	210,406,921	13.7
Louisiana	6,692,418	153,367,213	146,674,795	9.6
Kentucky	13,735,891	116,697,776	102,961,885	6.7
Missouri	20,900,547	48,383,540	27,482,993	1.8
Virginia	10,719,135	37,499,991	26,780,856	1.7
Alabama	21,288,803	45,177,772	23,888,969	1.6
Tennessee	12,392,111	32,305,745	19,913,634	1.3
Arkansas	4,483,137	21,516,894	17,033,757	1.1
Florida	4,828,783	12,701,362	7,872,579	.5
North Carolina	2,366,444	9,865,064	7,498,620	.5
Georgia	5,756,032	12,640,232	6.884.200	.4
Mississippi	874,279	3,831,784	2,957,505	.2
Maryland	11,745,736	13,294,557	1,548,821	.1
South Carolina	2,286,441	2,551,571	265,130	.1—
Totals	\$206,853,5751	\$1,738,856,614	\$1,532,003,039	100.0

¹ Exclusive of coke, coal products and pig iron valued at \$64,475,813 in order to make figures comparable with 1936 value which does not include these items.

TABLE 5. ESTIMATE OF MINERAL RESERVES IN THE SOUTH

Mineral	Reserves in United States	Reserves in South	South's per cent of U.S.	Years of reserves* 1927-1936
Petroleum, barrels	17,348,146,000 ¹	11,863,104,000 ¹	68	20
Coal ² , sh. tons	2,249,878,932,000°	542,274,437,000°	24	2,712
Natural gas, M cu. ft	78,100,000,0004	35,500,000,000	45	30
Iron ore, lg. tons Zinc, (recoverable), sh.	4,500,000,000	720,000,000 ⁵	16	163
tons Lead, (recoverable), sh.	5,942,023 ⁶	3,420,7316	58	24
tons	$10,000,000^7$	$4,000,000^7$	40	23
Aluminum ⁸ , lg. tons	30,000,000°	30,000,000°	100	115

¹ American Petroleum Institute Quarterly, April, 1939. ² Exclusive of lignite. ⁸ U. S. Geological Survey, Coal Resources of the U. S. by Marcus R. Campbell. ⁴ Practical Oil Geology, by Dorsey Hager, 1938. ⁶ Political and Commercial Geology, by J. E. Spurr, 1920, modified. ⁶ World Survey of the Zinc Industry, by W. R. Ignalls, 1931, modified. ⁷ National Resources Planning Facts, National Resources Committee, 1939, modified. ⁸ Baxire, 45 ⁶ or more alumina. ⁶ Estimated. ⁸ Estimated number of years of present known reserves will last at the average annual rate of production for the period 1927-1936.

new uses;

- (2) conserving mineral resources for long term use;
- (3) providing security for capital investment.

Concerning the first item, it may be noted that there are 43 active state geological surveys in the United States. These had an aggregate appropriation of \$1,390,414 in 1938-1939. Each one of the sixteen southern states has a survey and the aggregate appropriations for the support of these during the year referred to was \$513,587 or 37 per cent of the total allocated to all state surveys.

Concerning the second item, or the conservation of mineral resources, the most important mineral conservation activities have been, of course, devoted to the prevention of oil and gas waste and in the nine southern states in which either petroleum or gas occur all but one have mineral conservation agencies. Only one of the 16 southern states does not have a mineral conservation agency.

The third item, that of providing security for capital investment, has been made effective by a long list of legislative enactments directed, for example, toward:

- (a) provision for a period of tax-free operation of industries;
- (b) provision for workmen's compensation;
- (c) provisions for social security, i. e., unemployment insurance and old age pensions;
- (d) provision for the reduction of industrial health hazards.

In addition, determined and serious efforts are being made toward the readjustment of freight rates and definite progress is being made in this direction.

Loading mine cars in a West Virginia coal mine on the Norfolk and Western Railway.



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Naval Stores Operations In The South

SEEKING a place to utilize its excess chemical facilities, Hercules Powder Company, in 1919, studied the possibilities existing in the steam and solvent phase of the naval stores business. This was not the company's first contact with the industry, for its dynamite had been used for stumping purposes in the southern cut-over lands for years. In this instance, however, it was the chemical possibilities of the industry, not the stump blasting, that attracted Hercules.

In 1920 Hercules purchased the Yaryan naval stores plants at Gulfport, Mississippi, and Brunswick, Georgia, and built another plant at Hattiesburg, Mississippi. Homer T. Yaryan built the Gulfport plant in 1909; the Brunswick plant was built by the Yaryan organization in 1911.

After the completion of the Hattiesburg plant in 1921 and before the closing of the old Gulfport unit, the daily wood capacity of the two, plus that of Brunswick plant, was 630 tons. Now the consumption of wood at Hattiesburg and Brunswick is about 1,300 tons a day.

The stumps, which constitute raw material for the steam and solvent plants, are found in the vast cut-over lands in Mississippi, Georgia, and Florida. These remnants of lumbering are not useful until ten to fifteen years after cutting. By that time the bark has sloughed off, leaving the heartwood in which the resinous material is concentrated.

At the Hattiesburg, Miss., plant, stumps are purchased from farmers and shippers who bring their loads of wood direct to the plant. The raw material for the Brunswick, Ga., unit is gathered mostly by company crews who clear cut-over lands by lease arrangement with the

Top to bottom—Large tractors pull the pine stumps out whole. The stumps are split by dynamite to facilitate handling. Large reserves of stump wood are maintained at the plants to assure an uninterrupted supply of material. One of the woods camps where running water, electric

lights, modern bath conveniences, and play-

grounds are provided

\$550,000 worth of stumps were bought. Such clearance puts back into production for farm land, for second growth timber production, or for grazing, an average of 125,000 acres annually.

Originally, stumps were pulled by mule-

owners. Last year at Hattiesburg alone,

power or blasted with dynamite. They were gathered together and hauled by team. With increases in stumping costs, and in lease rights and freight rates, and greater distances to the plants, it was necessary to do yeoman work in lowering costs and increasing efficiency. Today that phase of the business is like a streamlined train in comparison to 1921 methods. The stumps are now pulled by large tractors adapted to the job. After caterpillar tractors gather them into groups and the larger stumps are split by dynamite and trimmed to facilitate handling, the pieces are loaded on trailer trucks which haul them to railheads from whence the cars are shipped to the plants.

Research the Keystone of Development

Research directed toward improvement of the process has brought about steady progress. The installation of the fractionating stills of special design by Hercules engineers resulted in a marked improvement in steam-distilled wood turpentine. Today the crude turpentine is fractionated to yield a high-quality product that has gained world-wide acceptance in practically all consuming industries. It possesses a pleasant, mild odor, and is uniform in quality. Special treatment of the crude distillate, as well as changes in the method of extraction, aided in bringing about these improvements.

With better methods of extraction and distallation, several new products derived from crude turpentine became available. A high-quality dipentene fraction has found wide acceptance as a special solvent and thinner in varnishes and enamel paints; it also enjoys considerable application as a raw material for synthetic resin manufacture. Other

(Continued on page 69)



Revival Of Shipbuilding At Tampa, Florida

BY Bill Abbott

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R EVIVAL of shipbuilding in the deep South has become an actuality with announcement from the Tampa Shipbuilding and Eingineering Company of Tampa, Fla., of the launching in the early fall of the first of nine cargo vessels to be built for the United States Maritime Commission.

The Tampa Company received its first award of four vessels in June, 1938, in the initial project of the Maritime Commission when it started its gigantic construction program to rehabilitate the nation's entire merchant marine.

Since then the Company has received awards for five more ships, a total of nine to cost around \$16,000,000.

The South, said Ernest Kreher, president of the Tampa Company, has every advantage for shipbuilding, and there is

no reason why the newly revived industry should not go far.

"Primarily, Tampa and the deep South have nearness to the greatest source of material supply, the Birmingham district," he said, "and it has a climate which permits outdoor work the year around in addition to excellent waterfront facilities and adequate sources of labor,"

Business men at Tampa have hailed the revival of shipbuilding as the beginning of the soundest and best era in the city's business and industrial history. They pointed out that it provides a new market for all lines of business through increased purchasing power.

Col. Harry C. Culbreath, chairman of the port development committee of the Tampa chamber of commerce, saw in the contract national recognition of Tampa's industrial facilities.

During the World War Tampa con-

structed 15 cargo vessels and had a top rating for efficiency among all the yards in the country.

After the World War the Tampa Shipbuilding and Engineering Company continued in a foundry and machinery business, principally building dredges and bridges, adding a 10,000-ton floating dry dock several years ago.

When the company received its first contract for the Maritime Commission it was forced to start from scratch, building ship ways, and rehabilitating its plant for ship construction.

In a little more than a year, it has developed a personnel of 1,400 men, mostly skilled workers, has one hull ready for launching, another nearing completion for launching this winter and a plant and equipment geared to even faster production in the future.

The Company now is using two ship (Continued on page 62)

West Virginia's Navigable Waterways

The following information is published as a part of the MANUFACTURERS RECORD'S service to those interested in the transportation facilities of the southern states. This data, which has not previously been available in printed form was prepared for the MANUFACTURERS RECORD by the United States Engineer offices of the War Department located at Huntington, W. Va., and Pittsburgh, Pa.—Editor, MANUFACTURERS RECORD.

A LTHOUGH an inland state, West Virginia has portions of six rivers or branches of rivers available for commercial navigation. The most important of these is the Ohio which traverses the western boundary of the state for over 200 miles at an average depth of nine feet. An indication of the use made of this river as a means of transport, is gained from the fact that in 1938 the volume of traffic between Clarington, Ohio

and Huntington, W. Va., amounted to 4,157,456 tons valued at \$13,424,466. To this should be added the volume of traffic between East Liverpool, Ohio and Mc-Keefry, W. Va., which, together with the volume of traffic on the Monongahela river between Maidsville and Fairmont, W. Va., is estimated at 4,600,000 tons valued at \$50,000,000. The terminal facilities of the Ohio and Monongahela rivers are listed below.

The second most important waterway is the Kanawha river which is navigable to a depth of nine feet for more than 90 miles from Point Pleasant, where it joins the Ohio river, down past Charleston, the state capital. In 1938, the traffic carried aggregated 3,332,777 tons valued at \$13,687,639. Terminal facilities of the Kanawha are listed below.

The Little Kanawha river is commercially navigable for 48 miles above the mouth at Parkersburg and has a project

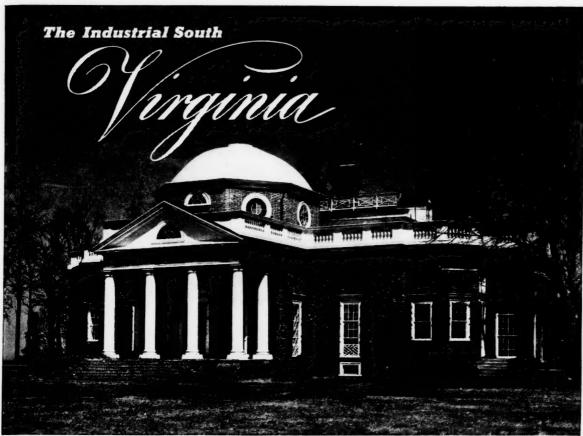
depth of four feet. The amount of traffic carried in 1938 was 48,147 tons valued at \$1,111,038. A gasoline and oil unloading station together with stiff leg derrick located about one and a half miles above the mouth of the river constitute the present terminal facilities. The project depth of this and the following rivers is not maintained at all times at present since traffic is regarded as light.

The Big Sandy river is commercially navigable for 27 miles from where it joins the Ohio near Kenova and has an average depth of six feet. A gasoline and oil terminal at Kenova is the only terminal facility. The Tug Fork and Levisa Fork of the Big Sandy river are commercially navigable at a depth of six feet for 12.5 and 17.5 miles respectively. There are no terminal facilities on these two Forks and the only traffic for the Big Sandy in 1938 comprised 30,856 tons valued at 8714.342.

Mechanical Appliances

OHIO RIVER TERMINALS

Location	Owner and Operator	Mechanical Appliances
Clarington Ohio	.Standard Oil Company	.2-4" pipe lines
New Martinsville W Va	Ohio Valley Sand Company	2 derricks and bins
New Martinsville, W. Va	. Ohio River Sand & Gravel Co	3 derricks and bins
New Martinsville W Va	. Gulf Refining Co	2-6" pipe lines
Now Matamoras Ohio	. Standard Oil Co	2-3" pipe lines
Crandviow Ohio	Sterling Oil Co	1-2" pipe line
St Manna W Vo	Sterling Oil Co	1.9" nine line
Williamstown W Va	Bridge Service Co	1-2" nine line
Marietta Ohio Mile Pur	. National Refining Co	1.9" nine line
14 miles below Moriette Obio	National Refining Co	Dock for loading tank harges
1.1 miles below Marietta, Onio	Sun Oil Co	9.21/# pipe lines
1.8 miles below Marietta, Onio	Dune Oil Co	2.2% pipe lines
2.6 miles below Marietta, Ohio	. Pure Oil Co	Loading dools and orang
Parkersburg, W. Va	. Parkersburg Iron & Steel Co	Donnish and him
Parkersburg, W. Va	. Kanawha Sand Co	Derrick and bin
In mouth of Little Kanawha River,		Denvish and Man
Parkersburg, W. Va	.Ohio River Sand & Gravel Co	Derrick and bins
Parkersburg, W. Va	.Gulf Refining Co	3-6" pipe lines
Long Bottom, Ohio	.Standard Oil Company	1-3" pipe line
Portland, Ohio	. Southern Oil Company	1-2" pipe line
Minersville, Ohio	. Excelsior Oil Company	1-2" pipe line
Minersville, Ohio	. Southern Oil Company	2-2" pipe lines
Above Kerrs Run, Pomeroy, Ohio	.T. A. Mays, Receiver	Transported by trucks to bins, chute to
	M. L. French	boats
Pomerov. Ohio	. Mt. Vernon Bridge Co	Hoist and belt conveyor
Middleport Ohio	Standard Oil Company	2-3" pipe lines
Pt. Pleasant. W. Va.	. Marietta Manufacturing Co	Marine ways and stationary derrick
Pt Pleasant W Va	M. T. Epling	Derrick and bins
Gallinolis Ohio	Standard Oil Company	2-3" pipe lines
Gallipolis Ohio	Condee Coal Co	Incline truck
Gallinolis Ohio	M. T. Epling	Cableway-river to bins
Crown City Ohio	Standard Oil Company	2-3" pipe lines
Huntington W Va	Gulf Refining Co	3-6" pipe lines
Mouth Guyandot River,	duit Menning Co	ro pipe imes
Huntington W Vo	Elk Refining Company	1.2" nine line
Mouth Guyandot River.	TAK Remning Company	r = pape mie
	Sterling Oil Co	1-4" nine line
Huntington, W. Va	Ohio River Company	Stationary honner and electric helt con-
muntington, w. va	Onto River Company	vevor
Huntington W Va	Ohio River Company	Incline track to renair shops
Conveille Obio	Standard Oil Company	2.2" ning linke
Huntington W Va	Union Sand & Gravel Co	Dorrick host floating hopper 9 incline
Truntington, W. Va	Union Sand & Gravet Co	trucks, and 3 cubic yard cars, storage bins and cableway
		•



Monticello, home of Thomas Jefferson, overlooking Charlottesville, Virginia

From tidewater to tablelands every fertile acre of the Old Dominion has been the theatre of some important event of Colonial times. As the first permanent English settlement in America, Virginia set the cultural and social pattern for the rest of the new world. In fostering many of the founders and leaders of our country, her institutions of higher learning have gained international prestige. Now, just as in the Seventeenth and Eighteenth Centuries, her colorful plantations produce corn, tobacco, peanuts, cotton and livestock of the highest quality. Besides this agricultural production, Virginia is known for textile, furniture, cigar and paper manufacturing as well as mining, deep sea fishing and shipping.

Strategically located on tidewater at Virginia's front door is Bethlehem's Maryland plant at Sparrows Point. Bethlehem is in a position to supply promptly every form of steel necessary to the development and upkeep of Virginia's many agricultural and industrial projects.

Did you know ?

That—the second oldest college in the United States is William and Mary. This school was founded at Williamsburg in 1693.

That—the Norfolk harbor can provide anchorage for 1000 ships without taxing its capacity.

That—the site of Norfolk, Virginia was bought in 1688 for 10,000 pounds of tobacco.

That—Thomas Jefferson invented the folding double doors used on modern trolley cars.

That—Chesapeake Bay produces more oysters than any body of water in the United States.



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BETHLEHEM STEEL COMPANY

MORE FOREIGN TRADE **OPPORTUNITIES**

THE extent to which international commerce has been disrupted by the present war is evident from the reports now being made public covering the month of September.

In this country foreign trade made appreciable gains in both imports and exports in September as compared with the same period of 1938. The increase of imports is accounted for by accelerated purchases by United States buyers against a rise of price and while present foreign stocks are undepleted. Other factors affecting United States imports are the large purchases of certain raw materials against future possible emergencies; finally there is the upturn in domestic industrial activity. Increased exports are due to larger purchases by neutral countries. Canada, and in certain commodities, to England and France, all of which have offset the normal purchases of other belligerent nations.

To what degree German imports and exports have been curtailed can only be surmised as no statistics are available. but, taking into account the British naval blockade and judging from British exports and imports which declined over 40 percent and 30 percent respectively from September 1938, it may be safe to assume that German foreign trade has come to a virtual standstill except for the amount which may exist with contiguous European countries.

As the war proceeds it may be anticipated that imports of raw materials, armaments, and implements of war, into belligerent countries will gradually increase to the point where their value may equal or surpass the value of normal trade, but it is probable that several months will pass before this change is likely to make itself felt. In the meantime, virtually every country's trade will be upset and no one can weigh the countless consequences to rightly appraise the future of our own domestic and international commerce. However, within certain limitations, it is possible to point out specific occurrences which may conceivably offer opportunities for the expansion of United States industrial activity. Not all of these are occasioned by the cessation of belligerent nations' exports, but may be due to cessation of exports or change of destination from one country to another, by neutral nations. Such an instance is the embargo on exports from certain Baltic countries, and this may well have a most pronounced effect upon some of our own industries. In a future issue we hope to present a summary of the situation from this viewpoint. Mean
*Machinery is Australia's largest importation valued annually in excess of \$50,000,000.

German exports to British colonies and dominions, stopped by War, make over \$100,000,000 market available

while, in continuation of the article "Foreign Trade Opportunities" which appeared in the October Manufacturers RECORD, wherein was presented a summarization of Germany's trade with South America, there now follows a précis of Germany's trade with the British colonies and dominions, a considerable part of which may offer decided opportunities for American industry.

AUSTRALIA

German goods imported into Australia in 1936-37 had a total value of \$17,760,000 in comparison with German exports to Australia in 1938 amounting to \$15,-988,746. In view of the fact that export statistics are not as accurate as, and are usually considerably below import figures, it may be presumed that the 1938 amount quoted here is approximately equal to the Australian imports of 1936-37. Among the German exports of 1938, the following comprised the principal items:

Silk, rayon and other syn-	
thetic fibers	1,285,932
Woolen textiles	110,952
Leather and leather manu-	
factures	464,712
Paper and paper goods	814,050
Stoneware, earthenware, and	
porcelain	285,822
Glass and glassware	643,602
Synthetic chemical products	127,434
Coal tar products	205,422
Cutlery	176,880
Dyes, varnish, and lacquers.	147,132
Pharmaceuticals and cosmet-	
ics	348,534
Miscellaneous chemical prod-	
ucts	827,718
Tools and agricultural imple-	
ments	409,236
Aluminum and alloy	252,496
Machine tools	806,010
Textile and leather ma-	
chinery*	616,266
Power machinery*	80,400
Pumps and compressors*	257,280
Paper and printing ma-	
chinery*	254,466
Food processing machinery*	144,318
Motor vehicles and aircraft.	1,108,716
Electrotechnical equipment in-	
cluding electric machinery*	1,072,536
Miscellaneous machinery*	314,766
Optical and precision instru-	074 000
ments	851,838
Watches and clocks	404,010
Musical instruments	317,982
Photochemicals	207,432

BRITISH INDIA

British India has been one of Germany's largest markets and German exports to that country have been steadily increasing in recent years until in 1937 only three countries outranked Germany as a source of supply. In 1937, imports of German goods into India totaled \$36,-549,000 compared with exports from Germany in 1938 amounting to \$42,836,316. Among the latter, the principal items

were.	
Beer	\$326,826
Cotton textiles	349,333
Silk, rayon and synthe	etic
fibers	365,820
Woolen textiles	230,748
Paper and paper products	2,135,826
Stoneware, clay and porcel	ain 406,020
Glass and glassware	682,194
Coal tar products	
Dyes, varnish and lacquer	s 542,298
Explosives and munitions	
Steel pipe†	697,470
Iron bars, shapes, plates a	
sheets†	591,744
Iron wire†	150,750
Railway materials	
Forgings	807,216
Copper bars, sheets, wire,	etc. 3,070,878
Aluminum bars, sheets, w.	
etc	
Wood products	316,776
Rubber products	$\dots 1.025,502$
Cutlery	672,546
Tools and agricultural imp	
ments	
Miscellaneous iron produc	
Miscellaneous copper produ	cts 638,778
Machine tools	576,468
Textile and leather i	
chinery*	1,826,286
Power machinery*	625,512
Pumps and compressors*	
Conveyors*	
Paper and printing mach	
ery*	
Food processing machine	
Electrotechnical equipment	
cluding electric machine	
Motor vehicles and aircraf	
Soaps, waxes, etc	
Photochemicals	
Optical and precision inst	
ments Pharmaceuticals	1.938.444
Tharmaceuticals	1,555,414

*The total value of all machinery imports into India annually averages between 60 and 70 million dollars. †1ron and steel imports from all countries into India averaged over 20 million dollars for several years and for the last two years has exceeded 30 million each year.

BRITISH MALAYA

On a per capita basis there are only (Continued on page 54)

LONG DISTANCE HELPS YOU



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- "PRICE CHANGE?" Advise your sales force. Cover customers quickly by telephone and pick up extra orders, extra good will.
- "CANCELATION?" Prompt personal discussion by Long Distance may save the sale and the customer.
- "OVERSTOCKS?" Long Distance will help you cover a lot of territory quickly and dispose of profit-eating stocks economically.

There are dozens of different ways in which you can use the speed and directness of Long Distance telephone service. . . . Remember, too, as you travel that telephone appointments prevent disappointments.



A Mess of Pottage

IN the October issue the spending spree revolved around the Prodigal Son. Our observations today center in twin brothers.

Though brothers and twins they were entirely different. These boys furnish a lesson for today as pertinent as at any time in this world's history.

One of these was a fellow who liked to loaf around and do little or nothing, and live largely on his stomach. The other moved his residence to the top part of his head and determined to be something, and do something worthwhile. The elder brother, ruled by his belly, sold out his fortune for a mess of pottage. The younger brother, ruled by his brains, bought the other's fortune at a bargain and made great use of it. It is a sad sight to see a man so weak as to throw away his birthright for one meal, but I don't know whether we ought to be so sorry for him or not. I think the brother who got the unused birthright and made fine use of it is to be congratulated and I think I have good authority for my statement, for years later a great king and poet said, "The God of Jacob is our refuge."

In the story of Esau we find a worthless, do-nothing, don't-care, drifting man, ruled by his appetite.

Jacob was a shrewd, keen, clever, ambitious man who carried his psychology successfully into every business and spiritual issue in his life.

I have heard him criticized time and again, but I have heard very few condemnations of the trifling, no-account, worthless Esau.

Today there is a great sentiment about the "forgotten man." But why is he forgotten? Is it not often because he has joined Esau, sold his birthright and gone to sleep? Isn't there some obligation on his part to get up, shake himself, and let people know that he is living and will not be forgotten?

I would rather wake up the forgotten man and make him let the world know he is alive than to pounce upon the men who have never been anything but alive and brand them with indifference to the forgotten man. I insist that the God of Esau is no refuge for this country, it is the God of Jacob who is our refuge.

Jacob had a dream that led to his conversion at Bethel. Esau was incapable of having anything but nightmares.

Jacob was a man of dreams and awoke to do things: Esau was a man of nightmares and got up with a grouch to do nothing.

BY Dr. John J. Wicker

Jacob could lie down with nothing but the ground for a bed and a stone for a pillow and dream of angels and awake to dedicate himself to the best. Esau, with a soft bed and pillow in his father's house could awake with only a desire for a mess of pottage.

Jacob's life led to the highest development of character and spiritual relationship man can know.

Esau's life developed into resentment and a demand, by force, for the things which another man had gone out and through twenty years of toil accumulated.

There is, today, much sociological sentiment in behalf of making a God who will love Esau and despise Jacob, but I am persuaded that they won't get away with it for long. The God of Jacob is still our refuge. That is the God of aspiration, ambition, thrift, vision, intellectual attainment and achievement.

The two main points in the Darwinian theory of evolution are: (1) The struggle for existence, (2) The survival of the fittest.

This has its basis in sound biology. Now we have undertaken a sociological program at absolute variance with Darwin's biological contention.

For my part, I am absolutely certain that all character is based on the law of the struggle for existence and I believe that the fittest in every struggle survives. "Every bit of character a man has he must fight for it," and fight to keep it.

No sociological law can revise this constitutional, biological law of nature which has been in operation ever since God tossed the world from his hand out into space.

Yet we are trying to make by legislation non-effective the constitution of the universe.

I am sure that the strong ought to help the weak. This is according to the highest authority and best teachings. But the way to help the weak is to teach them how to grow strong by helping them selves. This the eagle does with her young, and this every wise mother does with her child. Too much mother makes the poorest mother that ever lived. Likewise, when we inject paternalism into our legislative affairs to the point of paralysis of effort on the part of the weak, we have contributed to their weakness

rather than added to their strength.

Any man who does not think any more of his birthright than to sell it for a mess of pottage has no inherited right to have a birthright. The fact that he was born a few minutes before his twin brother gave him no real right to keep his birthright in his possession nor give him an old father's blessing, neither of which meant anything to a worthless life.

Esau despised his birthright, that is, he put no value on it and cared nothing for it.

Certainly his brother who desired it with all his heart and wanted to make the highest use of it, had a perfect right to buy it at the price paid, from one who cared no more about it than Esau did. Esau got all it was worth to him.

The value of a thing is often determined by who possesses it.

There are a lot of Esaus today who care nothing for their birthrights and, strange as it may seem, the government is largely on their side and is cussing out the Jacobs who appreciate values and want to make the highest use of every talent and opportunity.

Please, in considering the fact that Jacob bought Esau's birthright, do not dismiss from your mind the fact that Esau sold it and was as much a party to the contract as his brother, and if there is any blame, Esau is far more to blame for selling it than Jacob was for buying it.

Possibly both of them are alike to blame but I believe as between the two Jacob is far less culpable than his elder brother.

Suppose Jacob had not bought Esau's birthright, can any one say what would have happened to the birthright or to Esau? Would the world have been better or worse off if Esau had never made any use of his birthright? Every presumption is that he was the type of man who never would have made any use of it, whereas it became an asset to Jacob and in turn an asset to the world.

How can anyone defend Esau for selling his birthright? But this is just what a lot of people do and blame the whole transaction on Jacob. The birthright was Esau's not Jacob's. Esau controlled it, Jacob did not, and the condemnation belongs to the man who allowed his belly to ruin his brains.

If we do not look out in this country of ours we will make heroes of Esaus.

But somebody says "That was back in the dark ages." All right, the greatest

(Continued on page 63)

SAVE TIME IN THE OFFICE



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"WAYS TO SAVE TIME IN AN OFFICE"

names definite jobs on which both time and money might be saved by a practical analysis. For example:

Have you ever studied, at one time, all the forms in use in your office?

How many reports are produced but never used?

Have you studied the causes of peak periods in your office?

Are you using a direct or an indirect method of handling accounting or obtaining statistics?

Can related records that are now being handled separately be prepared in one operation?

Are your operators obliged to handle the same figures two or three times?

by lotating the handicaps that slow up the work

EXPENSIVE bottlenecks, annoying peak periods and unnecessary duplications of records are slowing up the work in many offices. These, as well as any other needless handicaps, can be revealed only by a simple, practical analysis of the work being done at each desk. To aid you in making such a survey in your own office, Burroughs offers "Ways to Save Time in an Office." It is a handy-size, 24-page booklet containing more than a score of definite and practical suggestions about how

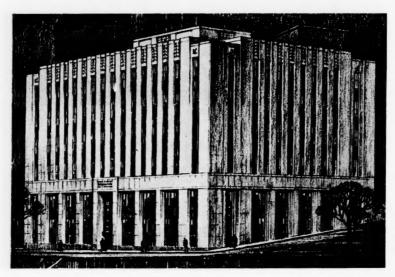
to save time and money in office work. You can get your free copy of this booklet by telephoning your local Burroughs office. Or, if you prefer, write on your own letterhead to—



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Burroughs

Industrial Contracts Take Major Role in Southern Construction during October



Southern construction in the first ten months of this year has reached proportions greater than for any similar period since 1930. The \$792,462,000 figure is higher than that for the comparable ten months of 1936, the year with an all time twelve-month record. The ten month total for this year is larger than the annual total for any of the years of 1929, 1931, 1932, 1933, 1934, or 1935.

October's \$91,169,000 is the second best monthly total for the current year, being surpassed only by that of May. Its level has not been equalled by any October since 1936. It is ten per cent above the total for the preceding month and twenty per cent in advance of the figure for October of 1938.

Private contracts were responsible for the October increase, with an industrial total larger than for any month since November of 1936. Industrial construction in October was almost six times that announced in the same month of the previous year and over two and one-half times the industrial total for the current September.

Power plant construction was most important from the viewpoint of expenditures for new plant construction in a particular field. Duke Power Company's 80,000-kilowatt addition to its Buck plant near Salisbury, N. C., was the largest. Its cost is placed at \$8,000,000. Completion is scheduled for June 1941. Construction at the same time went ahead on a 80,000-kilowatt unit at the company's Cliffside Station, on the Broad River, in

Cleveland County, North Carolina. Combustion Engineering Co., New York, it is reported, has contract to furnish the boilers for the Buck project.

Companies in Georgia and Alabama are also taking definite steps toward carrying out expansion programs. The Georgia Power Co., a Commonwealth and Southern subsidiary, placed an order with Westinghouse Electric & Manufacturing Co., for a turbo-generator to be installed in its \$4,000,000 generating plant at Macon. Westinghouse also received an order for a generating unit for the \$3.

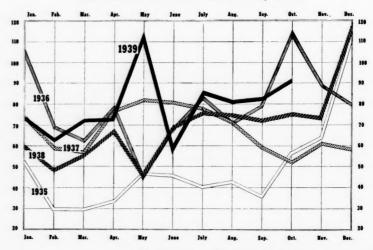
Chesapeake & Potomac Telephone Co., Baltimore, announced its plans for erecting a million dollar building as the initial step in a program to ultimately involve expenditure of \$5,000,000. The building, as it appears in the architect's perspective at the right, will rise six stories from a site at Saint Paul and Pleasant streets. In it will be installed the dial equipment necessary to improve downtown telephone service, as well as the executive and general offices. As designed by Taylor and Fisher, local architects, the proposed fireproof structure will have a foundation sufficient to support its ultimate height of twelve stories. Reports indicate bids will be opened in about two months.

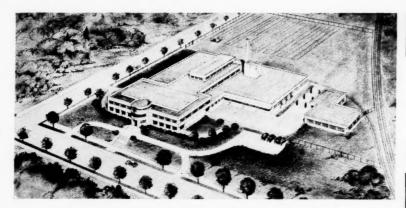
500,000 Mobile, Ala., steam plant to be erected by another Commonwealth and Southern affiliate, the Alabama Power Co.

Florida Power & Light Co. assigned to the Phoenix Utility Co., of New York, the task of erecting the \$3,000,000 steam unit at Dania, Fla. Central Power & Light Co. let initial contracts in connection with its extension at Corpus Christi, Texas.

Other developments were under way in Virginia and Maryland. The Virginia Public Service Generating Co., a new company organized as an affiliate of the Virginia Public Service Co., of Alexandria, Va., will erect a \$2,000,000 steam generating station with a capacity of 15,000 kilowatts. The turbo-generator to be installed will be designed for 650 pounds pressure at \$25 degrees Fahren-

Southern construction trends in millions of dollars





Plans are scheduled for completion in three months by Stone and Webster for the \$1,600,000 Fairfield-Western Maryland dairy to be constructed in Baltimore, Md.

Statistics of South's Construction

PRIVATE CONSTRUCTION	Contracts Awarded	to be Awarded	Awarded First Ten
BUILDING	Octob	Months 1939	
Assembly (Churches, theatres, auditoriums, fraternal) Commerical (stores, restaurants, filling sta-	\$1,021,000	\$2,482,000	\$13,736,000
tions, garages, etc.) Residential (apartments, hotels, dwellings) Office	2,010,000 7,818,000 2,225,000	2,067,000 3,455,000 1,145,000	25,589,000 80,572,000 15,893,000
	\$13,074,000	\$9,149,000	\$135,790,000
INDUSTRIAL	.\$43,296,000	\$32,403,000	\$132,716,000
PUBLIC CONSTRUCTION BUILDING City, County, State, Federal Housing Schools	\$5,741,000 5,409,000 1,808,000	\$15,370,000 18,933,000 7,976,000	\$103,725,000 61,668,000 57,835,000
ENGINEERING Dams, Drainage, Earthwork, Airports Federal, County, Municipal Electric Sewers and Waterworks	\$12,958,000 \$4,004,000 7,848,000 1,245,000	\$42,279,000 \$9,087,000 21,091,000 10,117,000	\$223,228,000 \$54,591,000 79,733,000 24,835,000
	\$13,097,000	\$ 40,295,000	\$159,159,000
ROADS, STREETS AND BRIDGES	\$ 8,744,000	\$ 12,954,000	\$141,569,000
TOTAL	\$91,169,000	\$137,080,000	\$792,462,000

heit. Consolidated Gas, Electric Light & Power Co., Baltimore, proceeded with work on a \$3,600,000, 35,500-horsepower topping unit at its Westport station, where installation of an additional \$4,500,000 unit will further raise the plant's capacity by 67,000 horsepower. General Electric Co. received the turbo-generator award.

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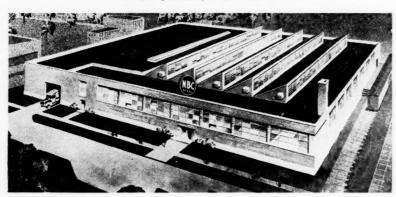
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Over a million dollars is being invested in additions to the Kieckhefer paper

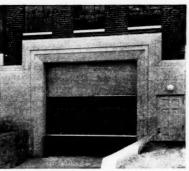
plant at Plymouth, N. C., known as the North Carolina Pulp Co. The construction contract was awarded to the William Muirhead Construction Co., which has started work on the five buildings. Structural steel is covered under a separate award to the Bethlehem Steel Co. This is the latest paper plant project for the South. A \$3,000,000 addition is being made at the Houston, Texas plant of the (Continued on page 38)

National Biscuit Company has awarded \$100,000 contract to R. A. Smallman Co., of Birmingham, Ala., for a new baking plant in that city with a monthly output of about 1,000,000 pounds of bread and rolls.



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Champion Paper & Fiber Co. The Fernandina, Fla., project of the Rayonier interests is well under way. A \$6,000,000 newsprint mill is almost finished at Lufkin, Texas, and a \$5,000,000 project is proceeding at Mobile, Ala., for Hollingsworth & Whitney Co. Proposed paper plants include the \$3,000,000 Pensacola, Fla., project of the Florida Pulp and Paper Co., and others for Mississippi and Georgia.

Important developments in the rayon field were those of the Carter Fabrics Corp., at South Boston, Va., and of the Celanese Corporation at Pearisburg, Va. C. M. Guest & Sons, of Anderson, S. C., received the contract for the rayon weaving plant for the Carter interests, which have a comparatively new plant at Greensboro, N. C. A 50 per cent expansion of the \$10,000,000 plant now being built at Pearisburg is reported. Hughes-Foulkrod Co., of Philadelphia, are contractors for the project now going forward.

Construction of facilities to enlarge the Electric-Metallurgical Corporation's \$5,-000,000 ferro-alloy plant at Sheffield, Ala., was indicated by reports. The corporation is a subsidiary of the Union Carbide & Carbon Corp., which has a \$1,000,000 chemical and plastic products project at Texas City, Texas. Molybdenum Corporation of America, Pittsburgh, Pa., has under consideration establishment of a tungsten concentrating plant at Eagle Pass. Texas. Continental Oil Co., Ponca

City, Okla., instructed M. W. Kellogg Co. to proceed with construction on a \$1,500,-000 building program to increase the quantity and quality of gasoline produced at its refinery there. Shell Oil Co. announced contracts for a \$600,000 gasoline extraction plant in the Magnolia field of Columbia County, Arkansas. The Wheeling Corp., Wheeling, W. Va., will expand at a cost of \$1,000,000.

The Fairfield Western Maryland Dairy Corp., Baltimore, made public that Stone & Webster Engineering Corp., of Boston, Mass., was preparing plans to be ready in three months for the \$1,600,000 dairy products plant proposed for a 10-acre site on Montibello Avenue, Baltimore. General Electric Co., Schenectady, N. Y., purchased 14 acres at Jackson, Miss., where a plant is to be erected for manufacturing sealed beam headlights for automobiles. A glass factory is included. Nashville, Tenn., will get a \$1,000,000 airplane manufacturing plant under plans of the Aviation Manufacturing Corp., of New York. To be located at the local municipal airport, the first unit will be approximately 350 feet square and is expected to require 1,000 workers. Negotiations are under way for establishing a similar plant at Fort Worth, Texas.

Private building work, during October was almost fifty-two per cent above the total for September. Among the largest projects were the \$1,000,000, 12-story, 200-room Barringer hotel at Charlotte,

N. C., awarded to the Southern Engineering Co.; the \$1,000,000 Commercial National Bank building, at Shreveport, Va., work on which is to be handled by James Stewart & Co., of New York; the \$500,000 project for modernizing and air conditioning the Shell building at Houston, Texas; the eight-story Continental Building addition at Dallas, Texas. There were smaller private projects such as the \$250,-000 apartment hotel at Washington, D. C., for Jerry Maiatico; the \$160,000 store and apartment project, also in Washington, for Shady Brook, Inc., and the \$150,-000 air conditioning system for the New Orleans Masonic Temple. Chesapeake & Potomac Telephone Co., Baltimore, announced a \$1,000,000 structure.

Commercial building in October went ahead with a total for the South of \$2,-010,000. Included were the \$375,000 building at Beaumont, Texas, for the White House Dry Goods Co., and the \$150,000 office and warehouse for the Grocers Supply Co., Houston, Texas. The \$100,000 project at Spartanburg, S. C., for F. W. Woolworth & Co.; and a \$100,000 Memphis, Tenn., remodeling project for Mc-Lellan Stores Co. will come up next year.

Highway and bridge work during October stood at \$8,744,000, or slightly above the figure for the preceding month and about thirty-seven per cent behind the contracts in October of last year. Road contracts for this year so far total \$141, 569,000, as compared with the \$174,297, 000 for the first ten months of 1938.

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New Industrial Plants and Expansions in the South During October, 1939

			,
Andalusia, Ala,Storage plant			Consumer's Ice & Cold Storage Co.
Anniston, Ala			Anniston Mfg. Co.
Birmingham, Ala. Steam power plant	40,000		. A. Belcher Lumber Co.
Birmingham, Ala. Plant	100,000		ational Biscuit Co.
Eufaula, Ala Improvements			nfant Socks, Inc.
Guntersville, Ala. Grain elevator	20,000	0	
Lanett, Ala	100,000		Vest Point Manufacturing Co.
Langdale, AlaWarehouses	25,000		Vest Point Manufacturing Co.
Selma, Ala			elma Times-Journal
Selma, Ala Locker plant	20,000		armers Meat Processing Co.
Magnolia, ArkNatural gasoline extraction plant	460,000		hell Oil Company
Washington, D. C	1.870.000		hesapeake & Potomac Telephone Co.
Coral Gables, Fla Broadcasting station		B	siscayne Broadcasting Co.
Dania, Fla Electric power plant	3,000,000	F	lorida Power & Light Co.
Fort Lauderdale, FlaRadio station		T	om M. Bryan
Jacksonville, FlaAdditional Recovery Room unit		N	ational Container Corp.
Pensacola, Fla			tandard Oil Co.
Pensacola, FlaSynthetic resin unit			trook & Wittenberg Corp.
Tampa, Fla Distributing plant	75,000		Republic Oil Refining Co.
Atlanta, Ga	50,000	T	rust Company of Georgia
Atlanta, GaPlant addition			lational Paper Co.
Atlanta, GaManufacturing building	35,000		lugh I. Richardson
Carrollton, GaPlant additions			oca Cola Bottling Co.
Dalton, GaFactory			. T. Bates Co.
Dalton, GaPlant addition			Cen Rau Mills
Fort Valley, GaGrain elevator			Iappyvale Milling Co.
Lawrenceville, GaMotor sales and service building			r. W. P. Ezzard
Kentucky Electric Distribution systems			ppalachian Electric Power Co.
Lexington, Ky Plant addition	45,000	V	Vomwell Auto Parts Co.
LouisianaGasoline plant			rkansas Fuel Oil Co.
Baton Rouge, LaRefinery docks			tandard Oil Co. of Louisiana
New Orleans, La Office and laboratory			oupe Products Co.
New Orleans, LaAdditions and improvements			ackson Brewing Co.
Shreveport, La			exas and Pacific Railway Co.
Ville Platte, La			entinental Oil Co.
Baltimore, MdGatchouse, penthouses and water cooling	00 000		P41 C-
Baltimore, Md	28,000		ever Brothers Co.
Baltimore, Md	1,000,000		hesapeake & Potomac Telephone Co. 'red W. Eckels
Baltimore, MdBuilding			leltzer Transfer Co.
Baltimore, Md			etrol Terminal Corp.
Baltimore, Md			amarata Bakery Co.
Salisbury, MdPipe line			itizens Gas Co.
Carthage, Miss,			arthage Coca Cola Bottling Co.
Jackson, Miss			ational City Lines
Houston, Mo			loward Camden
Kansas City, Mo			eorge Muchlebach Brewing Co.
Kansas City, Mo			nion Wire Rope Corp.
St. Louis, Mo			loan Moving & Storage Co.
St. Louis, Mo			amsey Accessories Manufacturing Co.
St. Louis, Mo			merican Packing Co.
St. Louis, Mo			Varner-Jenkinson Manufacturing Co.
St. Louis, MoBuilding			t. Louis Candle & Wax Co.
Asheville, N. C. Badio station		P	ublix Bamford Theatres, Inc.
(Continued on page	ae 56)		
(Continued on pa)	, 00)		



Above: On levee work in Kentucky with the new, big, powerful International TD-18 Diesel TracTracTor. Easy starting, easy steering, 6 forward and 2 reverse speeds, automatic clutch brake, power release steering clutches . . . these are a few of the valuable features built into the TD-18 that mean more work and lower costs.

me add up to more work per day and impornt savings on every operation.

r.

Getfirst-hand information on these Intertional Harvester products yourself. Watch em at work and talk to owners. Check

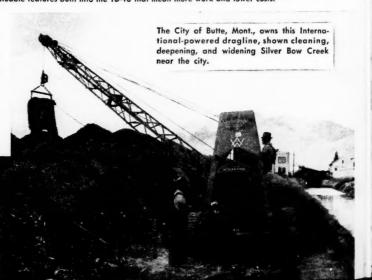
eir performance and economy any way you like. Ask the arby International industrial power dealer or Companyned branch for full information. Then you'll realize why tide is turning to INTERNATIONAL.

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue

Chicago, Illinois

NTERNATIONAL NDUSTRIAL POWER



New Ways

of Doing Things

New Acoustic Phone Booth

Combining modern design and scientific acoustic construction, a new model Burgess Acousti-Booth, known as Model 203, has been introduced to industrial, commercial, and public pay-station telephone users by the Burgess Battery Company, Acoustic Division, Dept. NR, Chicago, Ill. It offers the same sound-suppressing efficiency and privacy, it claimed, that is found in present models now in use in many factories, mills and power houses. Model 203 is made of ply wood with walnut finished exterior, and natural plywood interior with perforated pattern to allow the noise to disappear into the sound-suppressing inner wall. This construction, applied to the ceiling as well as to the walls, is said to actually absorb the noise instead of attempting to "block it out" with a door. Open construction permits ventilation and sanitation impossible with ordinary equipment of this type. The model was created for the company by Alfonso Iannelli, well known industrial designer.



Burgess Acoustic-Booth

R-P&C Dual Gland Cocks

Reading-Pratt & Cady Division of the American Chain & Cable Company, Inc., Bridgeport, Conn., announces a new line of asbestos groove-packed iron cocks with the usual gland to hold the plug in position and an additional gland to compress the top packing. Pressure on the plug and packing can be controlled separately. This new design, it is claimed, results in a 50 per cent reduction in the effort required to operate the cock and there is less wear on the moving parts. Alemite lubrication is provided through a groove between the top of the plug and the top gland. R-P&C Dual Gland Cocks are made in sizes from 11/2 inches to 6 inches for 125-pound and 250-pound steam pressures. For corrosive or high temperature services, these cocks may be supplied made from Ni-Resist (nickle-chrome) iron.

Xacto Proportioning System for Mixing Liquids

S. F. Bowser & Company, Inc., Fort Wayne, Ind., specializing for nearly 55 years in the design and manufacture of liquid handling equipment, has developed the Xacto Proportioning System for saving time and lessening cost in mixing liquids. This system differs from anything that has been introduced, in that liquid is actually measured by Xacto Meter and the ratio of the various ingredients positively and automatically controlled by the meters themselves. The system is extremely flexible, with a wide range of types and sizes for meeting any capacity requirement or type of liquid.

Alemite Pit Lift Air Jack

An air jack to be marketed as the Alemite Pit Lift Air Jack, for use in service stations and fleet repair and maintenance shops, has been introduced by



Alemite Pit Lift Air Jack

Stewart-Warner Corporation, Chicago, Ill., to augment its Alemite line of automotive equipment. This lift is designed to support body and engine weight, so that lubricants can flow freely around all important chassis bearings, such as king pins, shackles, and springs. Four models of the new device—all operated by compressed air—are available. Type No. 1 is designed for average drive-on lifts and steel rimmed pits; Type No. 2 for old style safety lifts, old type rotary lifts and concrete curb pits; Type No. 3 for steel rimmed pits where wheel guide curb is not strong enough to hold the weight of the car, and a "Z" brace is furnished with the Pit Lift to give added support from the wheel track of the pit; Type No. 4 is for all free-wheel lifts. The Pit lift has a capacity of 1½ tons.

Benjamin Tone Signal

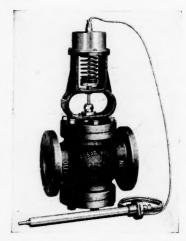
Benjamin Electric Manufacturing Company, Des Plaines, Ill., announces a new and improved line of howlers for industrial signal use, claimed to be a more efficient signal system with lower installation and maintenance cost. Three outstanding improvements in the Benjamin Howler are tone, volume, and simplified assembly, the latter permitting the operating unit to be more quickly installed, serviced or replaced. Greater sound penetration is secured in the unit by increasing sound volume 100 per cent and engineering a distinctive tone that gives the signal greater audibility.



Benjamin Industrial Tone Signal

Self-Operating Temperature Controller

The McAlear Manufacturing Company of Chicago, Ill., announces the development of a self-operating temperature controller, designed for direct control of liquid and gas temperatures, and adapted to boiler feed water heaters, hot water tanks, evaporators, chemical process temperatures, sterilizing processes and many other applications requiring the maintenance of uniform temperatures. The controller is available for wide temperature ranges—from 75 degrees to 260 degrees, Fahrenheit—in 40-degree stages. Any desired temperature between the specified points can be maintained through a convenient, easy adjustment of the valve spring. Controllers for a higher temperature range than that specified will be furnished on special order.



Self-Operating Controller for Liquid and Gas Temperatures

Light Duty Spray-Finishing Machine

Designed especially for quality light duty work, a new rotary, spray-finishing machine with a production range of 400 to 3000 articles per hour has been introduced by The DeVilbiss Company of Toledo, Ohio. The machine is intended to meet the need for fast, semi-automatic finishing equipment for articles and parts such as automobile horns, lipstick cases, radio bulbs, lamp shades, can lids, metal hardware, file handles, camera cases, paper cups, glassware, round metal ware, electrical parts, balls, footwear, speedometer cases, toys, etc. Installation of proper work holders permits the finishing of a variety of different parts on the same machine. Speed reduction unit is standard to permit variable speed operation, and, if desired, a cam may be provided so that every second spindle only is sprayed. The machine is known as Type YB-5103, and is powered by a ¼-horsepower motor with synchronous speed of 1800 R.P.M.

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ACME-GRIDLEY AUTOMATIC BAR MACHINES ARE FAMOUS for precision, speed and long life. These qualities are the result of expert design and unusually accurate, careful methods of manufacture. Carborundum is proud of the important part it plays in the production of this outstanding machine.

comes from

PRECISION HERE...

TYPICAL OF MANY PRECISION GRINDING OPERATIONS which assure accuracy of the $2^{1/2}$ Eight Spindle Acme-Gridley Automatic. Two bearing surfaces of the integral spindle carrier and stem are ground on same centers, at one setting with the same Aloxite Brand Aluminum Oxide Wheel. Tolerance in diameter allowed for $36^{\prime\prime}$ stem: $\pm 0.0005^{\prime\prime}$. Tolerance in periphery spindle carrier bearings: $\pm 0.0005^{\prime\prime}$. Alignment tolerance of stem with carrier from center axis for entire length of unit: $\pm 0.0002^{\prime\prime}$! Here again we note the advantage of having the right wheel in the right place.

for
GREATER PRECISION...
HIGHER PRODUCTION

CARBORUNDUM ABRASIVE PRODUCTS

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids (Carborundum and Aloxite are registered trade-marks of The Carborundum Company)

NOVEMBER NINETEEN THIRTY-NINE

TODAY'S GOOD DEED

That additional life insurance to further protect your dependents.

Telephone nearest Prudential office



THE PRUDENTIAL

INSURANCE COMPANY OF AMERICA
HOME OFFICE: NEWARK, N. J.

» » » Finance « « « AND KINDRED SUBJECTS

Important Merger

The merger of the Gulf, Mobile and Northern Railroad and the Mobile and Ohio, which is announced as having the approval of the Interstate Commerce Commission, gives the central South an important new trunk line. Running from East St. Louis to Gulf ports, it traverses a territory rich in possibilities for greater development due to its natural resources.

The new organization will be known as the Gulf, Mobile and Ohio. Its coming into being may mark a policy on the part of the Interstate Commerce Commission to give favorable consideration to other mergers that have in their favor the removal of uneconomic competition and duplication of facilities.

The railroad situation is in better shape than it was, but there is more to be done to put the carriers in an earning position that the best service requires. Whether through further economies by way of mergers or changes in capital structures, which investors already have approved in some instances, the problem presses for solution.

As a buying power in every state, the railroads in normal times account for 25 per cent of purchases. Their importance as a contributing factor to a better general business situation is evident.

Tax Burden

The Treasury's recent request for suggestions from business men for changes in the tax laws is understood to have met with a wide response. In this connection, Charles F. Baldwin of the National Association of Credit Men, pointed out in an address at Boston that the present federal, state and local taxes business has to bear constitute a decided threat to business and credit stability.

Quoting a survey of taxes paid by 250 manufacturers and wholesalers, it was shown 154 manufacturers had their federal taxes increased from \$8,902,000 in 1935 to \$15,200,000 in 1938. Local taxes of the same companies increased from \$8,600,000 in 1935 to \$11,200,000 in 1938. Federal tax payments of 106 wholesalers grew from \$950,000 to \$2,150,000 in this period.

It was found "the largest single contributing factor to this increased burden of taxation was Social Security taxes which with most firms exceeded the total normal federal income tax."

Activity at Birmingham

Birmingham, which has been the bright spot among the steel centers of the country throughout the depression, has advanced production to 94 per cent of capacity.

Fifteen thousand have been added to the district's employees since September 1st, with an increase in payrolls of \$1,250,000 per month.

Iron furnaces are operating at full capacity and informed sources state practically all of the demand for iron and steel is to fill orders in this country.

The backlog of business at mills and furnaces is sufficient to maintain activity for months to come.

Our Foreign Trade

For the first nine months of 1939 our trade with foreign countries shows a balance in favor of the United States of \$564,248,000.

Commerce Department figures show that exports in the month of September reached \$288,573,000, a gain of \$38,000,000 (Continued on page 44)

NATURAL GAS

A fuel whose value has been proven by years of use in a most diversified line of industrial applications.

Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY

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Birmingham, Ala.



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DRAWING MATERIALS

Drawing Instruments, Silde Rules, Planimeters, Drawing and Tracing Papers, Drafting Room Furniture, Surveying Instruments, Tanes.

PIGMENT Waterproof Drawing Ink

Catalogue sent on request, Inquiries solicited.

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BUSINESS IS IMPROVING

and plans for new development are being made.

Our purpose is to help business

Correspondence invited

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GWYNN CROWTHER, President

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Member Federal Reserve System Member Federal Deposit Insurance Corporation

Say it again-LOUDER!



Street, City

This phone booth blots up plant racket

Shop telephone mistakes are often serious. Improve your shop telephone service and stop these wasteful errors. Do whathundreds of plant managers have done—install a Burgess Acousti-Booth.

Illustrated Booklet Sent Free

Learn why this acoustically engineered booth improves telephone hearing conditions. Find out why it blots up noise and makes telephoning easv. Send the coupon for the Free Booklet giving illustrations of all models, prices, specifications, list of users. SEND IT NOW!

Burgess: Send me Free Acousti-Booth Booklet, without obligation!				
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Burgess Battery Company, Dept. K, 500 W. Huron St., Chicago

Operating under Burgess Patents

MITTI BURGESS MITTITIM

NOVEMBER NINETEEN THIRTY-NINE

THERE IS A DURABILT STEEL LOCKER TO MEET EVERY REQUIREMENT



High School

for Schools and Gymnasiums

For clothing storage, the Durabilt Lockers best suited to schools and gymnasiums are the specially equipped full length or Single Tier Lockers either recessed in the walls, on concrete bases, or free standing on legs. Where Single Tier Lock-

ers are not desired, we recommend the use of Double Tier Lockers. Multiple Tier Lockers, or "Box" Lockers are ideally adapted to storage of gym suits, books, sewing materials, etc. Combinations of any of these types, are of course, available. Durabilt Basket Racks and Trucks for gymnasiums, pools, etc., furnish well ventilated and secure storage facilities.



Country Club

for Clubs, Lodges, Hotels, etc.

As in the case of schools, the specially fitted or equipped interiors of full length or Single Tier Lockers either recessed in the walls, mounted on concrete bases, or free standing on legs are best suited to clubs, lodges, hotels, etc. Double Tier and

Multiple Tier (Box) Lockers are also widely used in these instances.



Factory

for Factories, Plants, Mills, etc.

For industrial establishments having large numbers of employees and where floor space is limited, there is available, in place of the full length lockers, a combination of Box Lockers and Single Tier Lockers, commonly known as Compartment

Lockers. The Multiple Tier (Box) Lockers are especially useful in storing small tools, aprons, shoes, gloves and such work-day articles.



Rank

for Offices, Stores, Banks, etc.

For the employees of such commercial establishments, the adaptation of Durabilt Steel Lockers is, of course, dependent upon the number of employees, floor space, interior decoration, etc. Any of the above mentioned lockers either singly or in the

innumerable combinations possible, are certain to meet ordinary or special requirements.

 Send us your inquiries for prices and complete information.

DURABILT STEEL LOCKER CO.

436 ARNOLD AVE.

AURORA, ILL.

"Finance and Kindred Subjects"

Our Foreign Trade

(Continued from page 42)

over August, and were the largest since January 1938. Imports increased over the preceding month by \$6,000,000.

Raw cotton exports jumped from \$11,869,000 in August to \$35,661,000 in September.

Other agricultural products showed increases while finished manufactured exports declined.

Will The Debt Limit Be Increased?

The present debt limit permitted the Treasury of the United States is \$45,000,000,000 of direct obligations. The debt now is at \$41,000,000,000. Congress controls appropriations and a majority is supposed to be opposed to increasing the debt limitation. The question will come up before long and the debate should be lively.

Unless taxes are increased or government revenues take a big jump upward, there is small prospect in sight for early debt reduction. Business views with alarm the present huge debt and certainly will turn thumbs down on any authority to increase the limit. Government believes in hand-outs to the unemployed and unemployment won't be greatly reduced while business has the fitters.

Since July 1, the beginning of the Federal fiscal year, the Treasury spent \$3,040,436,961 and took in \$1,686,004,851, making a deficit of \$1,354,432,109 in less than four months.

Arkansas' State Finances

Constituting what is described as the most exhaustive statement ever compiled on the state's financial activities, Comptroller J. O. Goff's recent report to Governor Bailey shows that the state of Arkansas ended its fiscal year 1938-39 with an enviable record in the form of a surplus amounting to \$1,132,666,11.

Total expenditures for the year were \$38,138,698.83 as compared to receipts in the amount of \$39,693,076.62. Of the total revenue, state faxation yielded \$29,369,552.77 against expenditures of \$28,236,886.66. From the \$8,364,553.26 of Federal grants to various state agencies, disbursements aggregated \$7,942,841.58 leaving a balance of \$421,711.68 which will be held in trust for future use.

The general classifications of expenditures are as follows:

Administrative expense (including ingilway	
maintenance)	\$13,005,094.78
Capital investments (new buildings, etc.)	5,966,386.08
Debt service—principal	3,260,486.79
Debt service—interest	6,073,925.67
Claims paid	92,113.42
Aid to common schools	5,174,145,44
Aid to counties	1,351,396.10
Other aid—grants, pensions, relief, etc	2.856,378.38
Purchase free text books	347,519.42
Taxes, property & betterment	11,252.75

The principal source of revenue is the gasoline tax, amounting to \$10,320,301.97. Other items producing more than \$1,000,000 were: sales tax, \$4,947,011.37; property taxes, \$3,344,488.62; automobile licenses, \$2,862,586.91; and cigarette tax, \$1,419.701.75.

In his letter of transmittal to the Governor, Mr. Goff stated "The finances are in excellent condition. Since January 1, 1937 our balances have increased approximately \$3,000,000. All of our bills have been paid and many millions of dollars have been spent in retiring bonds before maturity."



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-WELDED OR RIVETED-

We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION

This applies to field as well as shop built equipment

Write us for information and quotations

Chattanooga Boiler & Tank Co. CHATTANOOGA, TENN.

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THE COMMERCIAL SHEARING & YOUNGSTOWN, OHIO

Water Purification Plants

Any Type-Any Purpose-Any Capacity

Dry Chemical Feed Machines Swimming Pool Filters

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CONVERSE BRIDGE & STEEL CO.

Chattanooga, Tennessee

Structural Steel for all Industrial Structures, Buildings and Bridges.

LARGE STOCK FOR IMMEDIATE SHIPMENT



Filtration and Pumping Equipment

For Water Works and Swimming Pools
Sales and Installation

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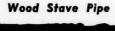
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Bristol Steel & Iron Works, Inc. STRUCTURAL STEEL

For Bridges, Buildings and All Industrial Purposes
Steel Plate and Miscellaneous Iron Work
Complete Stock Shapes, Plates, Sheets and Bars for
Immediate Shipment

BRISTOL, VIRGINIA-TENNESSEE
"SAVE WITH STEEL"

WOOD TANKS





THE BALTIMORE COOPERAGE TANK & TOWER CO.
Baltimore, Maryland

The Largest Works of Its Kind in the South



INDUSTRIAL NEWS

Erwood Sound Equipment

Erwood Sound Equipment
Company
Well known figures in the sound business,
John and Joe Erwood announce the organization of the Erwood Sound Equipment Company, 224 W. Huron Street, Chicago, Ill.,
culminating fifteen years' experience in sound
work. The new company will cover the field
in sound equipment, including portables of
all sizes, fixed installations, institutional and
school systems, industrial systems, interoffice communicating systems, mobile systems
and custom-built installations of all types
and sizes. John Erwood is president of the
company, in active charge of sales work, and
Joe Erwood is vice president, in charge of
engineering.

Wood Preserving Corporation Acquires Plant

Acquires Plant
The Wood Preserving Corporation, a subsidiary of Koppers Company, Pittsburgh, Pa, has acquired the railroad cross tie and forest products business of B. Johnson & Son, Richmond, Ind., according to announcement by W. F. Munikhuysen, president of The Wood Preserving Corporation, which produces pressure treated structural and bridge timber, poles, piling, docks and railroad ties in 22 wood-preserving plants in the United States. B. N. Johnson, Richmond, and R. H. Johnson, Little Rock, Ark., who have handled the B. Johnson and Son business in recent years, will become associated with The Wood Preserving Corporation.

• TROUBLE FREE!



Mr. J. B. Aicken, Manager of the Charleston Laundry, Charleston, W. Va., is just one of hundreds of laundry owners, mine operators, dairymen, food manufacturers, consulting engineers, city officials, et al, who have proved to their own satisfaction that Sterling's free floating drive shaft and precision assembly are distinct advantages which bring savings and trouble-free operation.



Alabama State Chamber of Commerce

At the annual meeting of the Alabama State Chamber of Commerce on October 19 at Birmingham, President Benjamin Russell of Alexander City submitted a report outlining the results of more than two years of active work by the Chamber. This report is published in booklet form under the caption of "Alabama Moves Forward Through Cooperative Effort, and covers in detail such general phases of the organization and its work as: Organization and Wembership; Know Alabama; Industrial Development; Agriculture; Forestry and Conservation; Transportation; Government and Legislation; Recreational Development; Turists; Information and Publicity; State Chamber Publicity; Research; Exhibits; Finances and Budget. The last five pages of the booklet present the names of officers and directors of the Chamber.

Coal Washing Plant

The Koppers Coal Company has awarded contract at approximately \$160,000 to Koppers Rheolaveur Company, Pittsburgh, Pa, for the first unit of a coal washing plant at the company's new mine at Kopperston, Wyoming County, West Virginia. The unit consists of a Menzies Cone Separator, 10 feet in diameter, capable of washing approximately 175 tons of three by three-eighths incheoal an hour. It is designed to permit the installation of additional washing equipment as the mine develops. An aerial tramway system also will be installed to dispose of refuse from the washing plant and lower tipple. Construction will be completed in about ten months. tipple. Construct about ten months

> Heating and Ventilating Exposition

Exposition

With more than two-thirds of the total floor space taken by exhibitors months in advance of the opening, the Sixth International Heating and Ventilating Exposition to be held in Lakeside Hall, Cleveland, Ohio, January 22 to 26, 1940, is off to a good start. The Exposition is held under the auspices of the American Society of Heating and Ventilating Engineers in conjunction with its annual meeting. The National Warm Air Heating and Air Conditioning Association will also hold its annual meeting at Cleveland during the same week. Like its predecessors, the Exposition will be held under the personal direction of Charles F. Roth, president of the International Exposition Company, Grand Central Palace, New York.

Additional "Silver Meteors" For Seaboard Railway

Seaboard Railway
Seaboard Railway, Norfolk, Va, announces
the purchase of two additional "Silver
Meteors" streamlined, stainless steel, seven
car, reserved seat coach trains, and nine 2000horsepower Diesel-electric locomotives. The
trains are being built by the Edward G. Budd
Manufacturing Company, Philadelphia, Pa,
and the Diesel-electric locomotives by ElectroMotive Corporation, La Grange, Ill. The units
will be placed in operation about December 1
to provide daily service between New York
and Miami, and every third day between
New York and St. Petersburg. The Dieselelectric locomotives will power the new
"Silver Meteors" between Washington and
Florida destinations, and the West Coast
"Orange Blossom Special" between Washington and St. Petersburg. Pennsylvania Railroad electric locomotives are used on these
trains between New York and Washington.

World's Largest Blast Furnace

World's Largest Blast Furnace
With a possible enpacity in excess of 1,200
tons of pig iron a day, the world's largest
blast furnace has been put in operation at the
Warren, Ohio, plant of Republic Steel Corporation. The giant furnace, an enlargement
of a unit built in 1930, is more than 106½ feet
tall, as compared with 91½ feet, the height of
the old furnace. Up to the time the furnace
was blown out in August of this year, upward of 2,000,000 gross tons of iron were made
on the 1930 lining.

Equipment to Charlotte Plant

Equipment to Charlotte Plant
The E. H. Jacobs Manufacturing Company,
Danielson, Conn., has taken over the Warren
Pulley Cover Company of Lawrence, Mass.,
and has moved the machinery and equipment
to its plant at Danielson, where it will manufacture synthetic leather pulley lagging of
covering. Production is nationally distributed
by jobbers and manufacturers' agencies.
Later a portion of the equipment will be
moved to Charlotte, N. C., and installed in the
factory of The E. H. Jacobs Manufacturing
Corporation, a subsidiary of E. H. Jacobs
Manufacturing Company, to serve Southern
customers.

New Celotex Appointments

New Celotex Appointments
George J. Dinges, former manager of the
Cleveland Division office of Celotex Corporation, Chicago, Ill., has been transferred to the
recently opened Atlanta Division office as manager of the Southern branch. J. Z. Hollmann
has been appointed manager of the Cleveland
Division office. Associated with the company
since 1926, Mr. Hollmann served as manager
of the St. Louis Division office for several
years and later moved into the general offices,
where he served in an executive capacity.
Prior to his appointment to the Cleveland
office, he was on leave of absence due to ill
health. Marvin Greenwood is general sales
manager of Celotex Corporation.

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Ross Heads Columbia Steel

At a recent meeting in San Francisco of the board of directors of Columbia Steel Company, subsidiary of United States Steel Corporation, William A. Ross was elected president of the company to succeed Ambrose N. Diehl, who resigned because of ill health after serving as president since 1932. Mr. Ross has been connected with the steel industry since 1895, becoming vice president and general manager of sales of Columbia Steel Company in 1932. With his resignation, Mr. Diehl, retiring president of Columbia Steel, closes an active career of 40 years' service to the steel industry.

Machine Tool Show Postponed

Because of the outbreak of war in Europe, members of the National Machine Tool Builders' Association have postponed indefinitely the Machine Tool Show which was to have been held at Cleveland, Ohio, October 4 to 13. This action also involves the postponement of the Machine Tool Congress which was to have been held at the same time in conjunction with the Tool Show.

Pittsburgh Plate Glass Opens Warehouse

Vice President H. B. Higgins of the Pittsburgh Plate Glass Company, Pittsburgh, Pa., announces the opening, October 2, of a warehouse at Corpus Christi, Tex., for paint and glass. The demand for paint, glass and ether products of the company prompted the opening of this warehouse to serve the lower region of the Rio Grande Valley, according to Mr. Higgins, and it will be the 76th link in the company's system, which covers the entire country. The Corpus Christi warehouse will be in charge of C. W. Herring, formerly of Houston.

United States Steel Promotions

United States Steel Promotions

Avery C. Adams has been elected vice president in charge of sales, and a member of the executive committee of the board of directors of the United States Steel Corporation of Delaware, effective October 1. He succeeds C. V. McKaig, who becomes assistant to the president, and continues as a member of the executive committee and board of directors. Mr. Adams is a graduate of Yale University and served in the United States Navy during the World War. His entire business career has been spent in the steel industry, with several years' experience in steel mills in the Youngstown district and specializing in metallurgy before entering sales work. He first joined United States Steel subsidiaries in 1936.

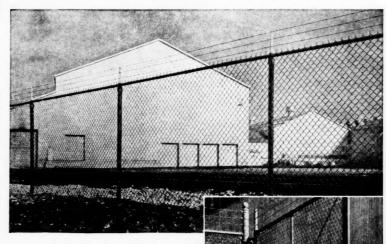
Another promotion involves the election of B. H. Lawrence, formerly chief engineer, to a vice presidency in charge of engineering, and as a member of the Corporation's executive committee and board of directors. With the exception of three years immediately following his graduation from college, Mr. Lawrence has been connected with United States Steel subsidiaries as a engineer. He became chief engineer of the Corporation January 1, 1938.

Rolph in New Position With Yale and Towne

Yale and Towne

The promotion of Henry D. Rolph to the position of Director of Export Sales, with offices in the Chrysler Building. New York City, has been announced by W. G. Carey, Jr., President of The Yale & Towne Manufacturing Company. Philadelphia, Pa. Mr. Rolph has been with the company for more than thirty years, and in that time has traveled over the world building up and maintaining the export organization that has made the Yale and Towne company a leader in the field. In his new position, Mr. Rolph will serve as director and adviser on export sales and operations, not only for the Continuental plants, but for the Yale plants in Stamford, Philadelphia, Chicago and Canada. (Continued on page 56)

How to Choose the Right Fence FOR YOUR BUSINESS PROPERTY



OU want a sturdy fence that will safely guard every foot of your property line one that looks well, will last for years and not require costly repairs. There's no economy in leaving your property an easy prey for thieves and marauders.

But, what is the right fence? How to choose it? Much depends on your type of property and many other factors. Our free book on fence will help you select the most practical fence for your needs. This 32-page book illustrates 14 different kinds of fencetells you what kind you need for business, playground, school or residential property. Tells you how to get fence with rails that won't buckle-gates that won't drag or slip -how to get extra protection against rust with fence that is galvanized after weaving.

Whether you need a few feet of fence or miles of it, whether you are planning to build a fence now or later, you need this valuable book. So mail the coupon. And remember that upon request you can have the services of a Cyclone factory-trained engineer. He will help solve your fence problem and give you an accurate estimate of cost. There is no charge for this service.

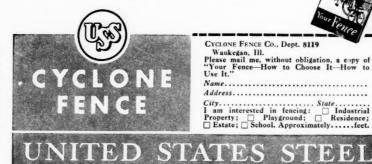
Now you can be sure of the quality of fence before you buy it. Cyclone Fence with the "12M" label has an extra-heavy

coat of galvanizing that resists rust and makes the fence last longer. Be sure that the "12M" label is on the fence you buy.

CYCLONE FENCE COMPANY

General Offices: Waukegan, Illinois Branches in Principal Cities Standard Fence Company, Oakland, Calif., Pacific Coast Distributors United States Steel Products Co., New York, Export Distributors

Send for FREE Illustrated Book



TRADE LITERATURE

SPEED REDUCERS—
Bulletin 75—illustrating and describing the Jones Worm-Helical Speed Reducers, a type developed for vertical shaft drives for agitators, mixers, etc., where a large reduction in speed is required; complete line in 15 standard ratios ranging from about 40 to 1 to approximately 250 to 1, for all the common motor speeds and horsepower ratings.

W. A. Jones Foundry & Machine Company, 4401 Roosevelt Road, Chicago, Ill.

PEERLESS PUMPS—
Catalog—64 pages, covering the full line of Peerless Pumps, including water-lubricated turbines, oil-lubricated turbines, propeller pumps, mine pumps and the new Peerless Hi-Lift pump; copies may be obtained from—

om— eerless Pump Division, Food Machinery Corporation, 301 West Avenue 26, Los Angeles, Cal.

MOTORIZED DOORS—
Bulletin No. 338—illustrated, devoted to motorized entrance doors for convenience, safety and economy, with pointers on selecting operators best suited for various type doors.

Doors and Operators, Inc., Tiffin, Ohio.

GAS GENERATOR— Bulletin No. 97—Illustrated, devoted to the Wellman-Galusha Clean Gas Generator; Bulletin No. 98—Clean Gas from Breeze Coke; Bulletin No. 99—illustrating and describing the Wellman-Galusha Atmospheric Gas

the Wellman-Galusna Generator.
The Wellman Engineering Company, Cleveland, Ohio, Engineers, Constructors, Manufacturers.

Manufacturers.

MOTORS AND DRIVES—
Booklet B-6029—presenting a large amount of buyers' data never before available on Lo-Maintenance Motors and Texrope Drives, designed for specifiers and buyers in estimating costs, types, sizes and drive equipment, etc.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

COCA-COLA DISPENSER— Booklet—devoted to the Mills' Coin-Con-trolled Cooler for dispensing Coca-Cola in bottles.

offiles.

Novelty Company, 4100 Fullerton

Avenue, Chicago, Ill.

AUTOMATIC MOTOR CONTROL— Booklet 88 — illustrating and describing EC&M Custom-Built Automatic Motor Con-

The Electric Controller and Manufacturing Company, Cleveland, Ohio.

ACID-PROOF TANKS— Bulletin No. 404—illustrated, devoted to storage and mixing equipment for acids and corrosive chemicals—tanks, jars, pots, trays, etc.

trays, etc.
The United States Stoneware Company, 80
East 42nd Street, New York, with factory
at Tallmadge, Ohio.

BOLTS, NUTS, RIVETS, RODS—
Catalogue No. 39—devoted to a concise but comprehensive description of bolts, nuts, rivets, rods, and related products, as meaufactured by—
Pittsburgh Serew and Bolt Corporation, Pittsburgh, Pa., affiliated with Gary Serew and Bolt Company, Gary, Ind., and Chicago, Ill., and American Equipment Corporation, Norristown, Pa.

Bankers Directory.—The final 1939 edition of the Bankers Directory, up to date as of August, with complete national and international banking and financial information, has been published by the Bank Publication Division of Rand McNally & Company, New York City. With a total of 2390 pages, the Final 1939 edition covers the latest bank statements, changes in official personnel, directors and correspondents, and other changes. Iwo lists have been revised and added to—a list of the nearest banking points to non-bank towns, and a 5-year list of discontinued bank titles (closings, mergers, absorptions, etc.). General information has been revised and added to as of August 1939, and foreign bank information has also been brought up to date. The price of cloth bound copies of the Directory is \$15 per copy delivered.

Modern Plastics.—The October issue of Modern Plastics—a catalog-directory—differs from former issues in planning and make-up, in that each descriptive article of olastic materials, so far as possible, follows a prearranged pattern for easy reference. The chemical set-up, recent developments, typical uses, forms available, methods of handling and trade names of each product are logically presented so that search for particular information on any subject, especially upon any type of plastic material, is shortened and simplified. In this respect, it is claimed, the book becomes the first reference work ever printed along these lines on the subject of Organic plastics. It is from the press of Breskin Publishing Corporation, New York, N. Y., and is priced at \$2.00.

Patent Fundamentals.—This publication is by Adelbert Schapp of Schapp and Cole, Patent Attorneys. San Francisco, California, published by The Industrial Press, 148 Lafayette Street, New York, and by Machinery Publishing Co., Ltd., Clifton House, 83-113 Euston Road, London, N. W. 1.

In a preface by the author, the purpose of the book as outlined, is particularly to aid the inventor in securing a correct understanding of the problems involved in obtaining proper patent protection. It is also designed as textbook for inventors, executives and students, explaining in non-technical language and demonstrating by practical examples the underlying orinciples of true invention, procedure in obtaining adequate patent protection, drafting of effective claims, etc.

MECHANICAL RUBBER GOODS—
Catalog—Fourth edition of "Manhattan Rubber Products for Industry," a condensed catalog of mechanical rubber goods, describing hundreds of products and special items manufactured by Manhattan, placing particular emphasis on belting, hose, packing, molded rubber goods, etc.
The Manhattan Rubber Manufacturing Division, Raybestos-Manhattan, Inc., Passaic, N. J.

PLASTICS—
Booklet—"New Paths to Profits," illustrated in colors, designed to serve as a "business man's guide to modern plastic materials," discussing such materials as resinoids, laminated materials, paints and varnishes based on Bakelite resin, heat hardening lacquers and cements, and other plastic materials.

Bakelite Corporation, 247 Park Ayenue, New York.

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Truck to Storage

Since no two overhead handling problems are alike, low-cost solutions are found only in a system that offers extreme flexibility of basic design.

American MonoRail equipment meets varying requirements at low initial cost because standard parts of such flexible design are fabricated into special units and coordinated into systems guaranteed to produce the results intended.

For either manual, electric or automatic operation these systems invariably overcome operating congestion, eliminate costly maintenance and reduce handling expense wherever applied. Engineering consultation is available without obligation.

> A 254 page book used as a technical reference for all data covering Mono-Rail Equipment will be sent on letterhead request.

AMERICAN MONORAIL CO.

13109 Athens Ave., Cleveland, O.

Catalog No. 182—featuring new HEET MASTER Heating and Melting Kettle, which offers a new way to heat tar, pitch and asphalt with a saving of 50 per cent, it is declared, on fuel, and a saving of 50 per cent on time.

Aeroil Burner Company, Inc., West New York, N. J.

MAGNET WIRE

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OR

Catalog and Handbook—Revised new edition, covering magnet wire and coils for every type of service, with added information, dealing with electrical and physical properties; also gives more space to the use of Magnet Wire coils; available also is a small size pocket handbook containing all technical tables of information to the shopman and engineer.

Anaconda Wire and Cable Company, Advertising Department, 25 Broadway, New York City.

PROFIT LEAKS AFTER PRODUCTION—
Booklet—"Stopping Profit Leaks Beyond the Production Line," prepared especially for executives, describing the causes of excessive packing and shipping costs and suggesting methods of eliminating them; illustrating the manner in which the Acme Steelstrap and Unit-Load Processes may be used for cutting out unnecessary expenses, damages and loss of time, Acme Steel Company, 2840 Archer Avenue, Chicago, Ill.

Chicago, Ill.

NEW ORLEANS MARKET—
Folder—"A Line on the New Orleans Market," presenting market data information as well as a map showing the distribution area of the morning Times-Picayune and Sunday Times-Picayune—New Orleans States in the retail trading area, and also the area in which there is 20 per cent or greater circulation coverage based on method proposed by the A. B. C. to meet demand of space buyers; also map showing location of new and old oil fields.

The Times-Picayune Publishing Company, New Orleans, La.

WESTINGHOUSE INCOME DOLLAR VESTINGHOUSE INCOME DOLLAR— Folder—presenting a pictorial dollar, em-blematic of the \$160.000,000 gross income of the Westinghouse Electric and Manufactur-ing Company in 1938, and explaining to the employes the way the money earned by the company was expended. The Westinghouse Electric and Manufactur-ing Company, East Pittsburgh, Pa.

The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

CAST IRON PIPE—
Official Publication—"Cast Iron Pipe Research Association, Chicago, in which a number of Southern companies hold membership, including: Alabama Pipe Company, Anniston, Ala.; American Cast Iron Pipe Company, Birmingham, Ala.; James B. Clow & Sons, with a plant at Birmingham; Glamorgan Pipe and Foundry Company, Lynchburg, Va.; Lynchburg Foundry Company, with plants at Lynchburg and Radford, Va.; MeWane Cast Iron Pipe Company, Birmingham; National Cast Iron Pipe, Division of James B. Clow & Sons, Birmingham; Inited States Pipe and Foundry Company, Burlington, N. J., with Southern plants at Bessemer and Birmingham, Ala., and Chattanooga, Tenn. The April edition of the publication carries a number of interesting articles and Items, many of which refer to the use and re-use of cast iron pipe in Southern communities, including Fort Worth, Tex., and Boca Raton Club, Florida.

The Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, 1015 Peoples Gas Building, Chicago, Ill.

1015 Peoples Gas Building, Chicago, Ill.
BIRD NEPONSET PRODUCTS—
Office Publication—"Bird Neponset Review," for October, featuring a safety message by President Benjamin H. Roberts of Bird & Son, Inc., with other interesting features, including a list of Bird products.
Bird & Son, Inc., East Walpole, Mass.
PULLEYS AND MOTOR BASES—
Booklet No. 860—"Illustrated, covering all types of Rockwood Paper Pulleys for industrial uses; particularly useful to those interested in plant equipment and its maintenance; Booklet No. 861—"illustrated, devoted to Rockwood Pivoted Motor Bases, with prices and dimensional information.
Rockwood Manufacturing Company, Indianapolis, Ind.
WIRE AND FILTER CLOTH—

dianapolis, Ind.

WIRE AND FILTER CLOTH—
Booklet—illustrated, 47 pages, publication divided into three general sections as follows: Section 1, Wire & Filter Cloth; Section 2, Fabrication; Section 3, Technical Data. The Multi-Metal Wire Cloth Company devotes its exclusive attention to the production of wire and filter cloth and its fabrication for process industry apparatus.

Multi-Metal Wire Cloth Company, Inc., 1350 Garrison Avenue, Brox Boro, New York.



SALES THROUGH COMFORT

Business in general benefits when air conditioned comfort is available to patrons, through correct automatic control devices. When "control by Johnson" performs the important job of comfort selling demanded by department stores, architect, engineer, contractor, and owner are assured of dependable performance. The Johnson organization covers the entire continent and engages in just one line of business—the design, manufacture and installation of automatic temperature and air conditioning control systems.



West Virginia's Navigable Waterways

(Continued from page 30)

	Location Camden, W. Va	Owner and OperatorHarmon Coal Company	Mechanical Appliances Transported by trucks to bins, chute to
1	Huntington, W. Va	. Wilson Sand & Supply Co	barges Derrick boat, floating hopper, 2 incline tracks, and 3 cubic yard cars, storage
		. Standard Oil Co	hing and aphlomay
]	Huntington, W. Va	. Island Creek Fuel & Transportation Co	Stationary hopper and electrically driven
1	Huntington, W. Va	.Pure Oil Co	2-4" pipe lines
9	hesapeake, Ohio	Gillen Motor Company	1-2½" pipe line
		. Union Sand & Gravel Co	olovator inclina track
I	Cenova, W. Va	Sun Oil Company	1-6" pipe line—tanks
F	Cenova, W. Va	Kenova Saw Mill Co	Derrick boat, movable land hopper, stor-
F	Cenova, W. Va	Basic Products Co	Incline truck
ŀ	enova, W. Va	· Ashland Refining Co	2-6" pipe lines, 1-5" pipe line
		Greene Terminal Company	
		P. Milliron Transfer & Storage Co	
T	oronto, Ohio	Ohio Edison Company	Cantilever Hoist
N	ew Cumberland, W. Va	W. Va. Fire Clay Mfg. Co.	Conveyor & Dock
V	Veirton, W. Va	Weirton Steel Company	Conveyor
		Weirton Steel Company	
H	olidays Cove, W. Va	Costanzo Coal Mining Company	Tipple
		Eastern Ohio Sand & Supply Co	
		Standard Oil Co. of Ohio	
		Wheeling Steel Corp.	
S	eubenville, Ohio	Wheeling Steel Corp	Gantry Crane
		Wheeling Steel Corp	
F	ollansbee, W. Va	American Tar Products Co	Pinnle
M	ingo Junction, Ohio	Carnegie-Illinois Steel Corp	Derrick
M	ingo Junction, Ohio	Carnegie-Illinois Steel Corp	Gantry Crane
W	ellsburg, W. Va	B. O. Cresap	Derrick
		Costanzo Coal Mining Co	
		Wheeling Coal Company	
W	heeling, W. Va	Sun Oil Company	lock & pipe lines
W	heeling, W. Va	American Oil Company I Costanzo Coal Mining Co	Oock & pipe lines
		Gulf Oil CorporationP	
M	artins Ferry, Ohio	Standard Oil Co. of OhioP	Pipe lines
		Wheeling Steel Corp	
Ma	erting Ferry, Ohio	Quaker State Oil Refining Corp	operiek
W	neeling, W. Va.	Standard Oil Co. of N. J.	ipe lines
W	neeling, W. Va	Ohio River Sand & Gravel Co D	errick
		Standard Sand & Gravel Co	
Be	llaire. Ohio	H. L. Seabright Company	errick
Be	nwood, W. Va	Wheeling Steel CorpT	ower Crane
Be	laire, Ohio	Costanzo Coal Mining Co	errick & Conveyor
		Valley Camp Coal Co	
Mo	undsville, W. Va	Standard Oil Co. of N. J Pi	ipe lines
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		MONONGAHELA RIVER TERMINALS	
	Location	Owner and Operator	Mechanical Appliances
		Telleys Creek Colliery Co	
		Celleys Creek Colliery Co	
Gra	nville, W. Va	merican Oil Company,	
Com	nville W Ve	Morgantown-Pittsburgh	
Mon	gantown, W. Va	oal Dock CompanyTi tandard Oil CompanyDo	ock & Pipe Liñes
Mon	gantown, W. VaG	ulf Oil Corporation	ock & Pipe Lines
Mon	gantown, W. Va	CClain Sand CompanyDe	errick
		ygart Construction Co	
Fai	mont. W. Va	mallwood Low Stone Co De cClain Sand Company De	rrick
Fai	mont, W. Va	ay BrothersDe	rrick
Fair	mont, W. Va	ulf Oil CorporationPi	pe Lines
Fair		andard Oil CompanyPip	
		OADING TIPPLES ON KANAWHA RIV	
	Name of Owner		tructure and Location
V. /	. Vintroux, Winfield, W. Va		nute to barges, Below Winfield, W. Va.

(Continued on page 58)



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Field House, Swarthmore College, Swarthmore, Pa. 11,000 sq. ft. Actinic Corrugated Wire Glass Skylights.

SPECIFY ORIGINAL SOLID CORRUGATED

It diffuses light with a minimum of shadows. It is practically self-cleaning and can be used on a roof of any material and supply daylight in manufacturing and industrial plants-an important factor in all modern production.

Also used with excellent results on sidewalls, marquises, canopies and wherever daylight is needed.

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Ideal for use when you need a sheet metal which can be easily formed into unusual shapes without cracking or unusual shapes without cracking or flaking. Its uniform, close grain means greater tensile strength. It is fortified against the attacks of time and weather; its FOUR element composition—Chromium, Nickel, Copper and Iron—makes it last years longer. Investigate this remarkable alloy today.

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Plants at: New Orleans; Winnfield, La.; Leuisville, Miss. Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.

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Better Floors for Safety

Kerlow industrial floors are safer and give better ventilation—made in various types 70% to 90% open—made in all riveted and rectangular designs for personal choice. Kerlow "BOLDEJ" Safety Steps are made in all grating designs. Ask for catalog.

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 Non-slipping
 Fireproof
 Self-cleaning
 Custom-Made to Fit

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Birmingham, Ala.
Jacksonville, Fla.
New Orleans, La.

Chattanooga, Tenn. Knoxville, Tenn. Baltimore, Md. Memphis, Tenn. Louisville, Ky.

KERLOW STEEL FLOORING COMPANY

220-222 Culver Avenue

Jersey City, N. J.

Pre-fabricated All-steel Buildings

Twenty different pre-fabricated steel utility buildings at the new Irvin Works of Carnegie-Illinois Steel Corporation afforded one of the largest scale demonstrations of the advantages of pre-fabricated panel type construction ever attempted. All panels in these structures were fabricated from light gauge flat rolled steel sheets. The various units, some inside the plant buildings and others outside the main mill buildings, covered a wide range of sizes and shapes. Three are two-story units, with offices on the first floor and wash and locker rooms on the second, while others serve exclusively as offices.

Previous experience had shown that it cost approximately \$75 per employee to provide modern wash, locker and toilet facilities. Pre-fabricated steel panel construction, however, installed in most cases after the main mill buildings were erected, provided better facilities at a cost of only \$63 per person.

The exterior walls, roof, partitions, pipe closets, etc., of all the buildings were constructed from pre-fabricated light gauge flat rolled sheets, formed into various shapes and sections to give structural strength and provide for connecting the panels.

Wall and roof sections were delivered nested and crated, cut to desired lengths. Wall sections were erected on poured concrete bases, the floor and 8 inch curb on which the walls were set, being cast integrally with the foundation bolts in place. After the foundations had hardened, a felt mastic strip was laid and on it the metal sill pieces were fastened in place. Metal door and window frames were installed as units as the work progressed. All doors are of formed steel, either hollow metal or kalemine construction. carrying stainless steel kick plates. Windows are all rolled steel sections, commercial projected type.

It was found that pre-fabricated metal structures were particularly adapted to quick and easy plumbing work. All piping connected with toilet facilities was installed in concealed 2'-6" pipe spaces having an access door for ease in maintenance and periodical valve adjustments.

Shower rooms are faced with porcelain enamel sheets. In many instances the entire room is faced with these sheets, while in other cases the porcelain enamel is carried to a heighth of 8 feet, the facing extending out from the shower sections far enough to avoid splashing of painted surfaces. The floors are finished with a special germicidal floor surface, troweled on the concrete.

Assembly in the various buildings varied according to their type and design. Tack and seam welding was used in some, self-tapping screws in others, and con-

cealed bolts and clips in other instances.

All metal sections were delivered finished with a shop coat of baked-on lacquer or leaded paint.

Insulating material varied according to the type of structure. Some units have granular material sealed in place. Others have insulating board of various materials incorporated into their basic design, and others make use of paper covered rock wool bats installed as construction advanced. Compressing the bats to fit the 3-inch partition or wall holds them in place when the inner surface plates are attached. In every case sound deadening and thermal insulation was satisfactory.

Flat roofs are used on all buildings ceilings being approximately 11 feet above the floor level to assure good ventilation. Roof decks were pre-fabricated, using flat rolled light gauge steel formed into shapes to give the structural strength required. In the case of outside buildings, a 1-inch insulating board was applied to the outer surface and finished with a four-ply built-up composition roofing.

Heating installations depend upon the size of the rooms and their use. Large locker rooms and wash rooms are heated with unit heaters suspended from the ceiling. Small rooms, such as shower and wash rooms, make use of ceiling or wall hung steel radiators of the fin type. Offices are heated by means of similar wall type radiators. Steam lines are all insulated and carry only low pressure steam within the buildings. Steam supply comes from the 200 pound pressure main plant lines. being reduced to 10 pounds outside of each building through reducing valves protected by safety valves and special explosion heads on the low pressure side to assure full protection within the rooms at all times.

Much valuable data was secured during the fabrication and erection of the twenty separate pre-fabricated utility structures, but it has been demonstrated at Irvin Works that industrial offices, wash, and locker room structures of this type of construction offer substantial economies in first cost, and also many other advantages such as ease in plumbing and steam fitting, temperature and ventilation control, as well as good working conditions. Electrical lines and fixtures are easily installed. Fire hazards are eliminated and maintenance is both reduced and simpified.

North Carolina Industrial Expansion

Fifty-one new industrial plants were located in North Carolina in the first eight months of 1939 according to J. T. Anderson, State Industrial Engineer. In addition, 66 existing plants expanded their facilities in the same period.

Textiles continue to occupy the lead in the industrial expansion. Twenty-nine of the new enterprises were listed in this classification, and sixty of the additions were made by textile manufactories.

In the past few weeks, industrial expansion in North Carolina has been particularly active and a number of buildings and plant sites are reported to have changed hands since the figures above were compiled.

The Commerce and Industry report, January 1 through August 31, 1939, follows:

TEXTILES-	
Dyeing and Fin	5
Hosiery	16
Knit Goods	2
Cotton Goods	2
Cotton Yarn	2
Silk and Rayon, etc	2 2 1
Miscellaneous Textiles	1
Miscendineous Textures	
	29
Flour, Feed and Meal	1
Food and Kindred Products	6
Furniture	1
Paper and Printing Industries	7
Mine and Quarry	i
Woodworking	1
Miscellaneous	5
Management	_
TOTAL NEW	51
ADDITIONS	
TEXTILES-	
Dyeing and Fin	5
Hosiery	
Knit Goods	3585
Silk and Rayon, etc	5
Cotton Goods	-8
Cotton Yarn	5
Miscellaneous Textiles	4
	_
	60
Flour, Feed and Meal	1
Food and Kindred Products	3
Paper and Printing Industries	1
Furniture	1
TOTAL ADDITIONS	66

West Virginia Coal Exhibit

A story of coal by-products and derivatives and how they "grew" from the black diamonds which underlie West Virginia's mountains—a story told in motion picture, diorama and comprehensive displays proved a highlight of the state's annual Forest Festival at Elkins, W. Va.

The exhibit was designed to point out to West Virginians and visitors from other commonwealths that coal has definite and specific possibilities in a program of industrial development, and to awaken in the minds of mountain state residents a desire to utilize coal and associate resources in bringing about such a development, tangible evidence of which would be the location within the state of additional by-product and processing plants. Sponsor of the exhibit was a northern West Virginia promotional agency, the Upper Monongahela Valley Association.

Thirty of the nation's plastics and other coal by-product manufacturers sent displays, which were supplemented by exhibits of model mine processing equipment, geological formations, and pyramids of the state's leading coals, now being mined.

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are behind the service of Eppinger and Russell Co. Industrial and commercial lumber of all kinds is made immune to termites and dry rot by pressure-treating with ZMA or Creosote. Consult Eppinger and Russell Co. on your requirements in poles, posts, piling, cross ties, cross arms and other timber. It will add 8 to 20 times the natural life to any woods you have treated by this low-cost, dependable process.

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CAPACITY-8000 tons daily

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By making concrete pipe on the job with Quinn Forms you give more men more work, can use less experienced labor and produce uniform concrete pipe of highest quality. Recognized standard of all concrete pipe,

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Washed Sand and Gravel for Concrete Roads and Buildings Filter Gravel, all sizes—Building Bricks

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AOUNT AIRY GRANITE

Blue Ridge, Va.

THE NORTH CAROLINA GRANITE CORP'N.

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STRUCTURAL for BUILDINGS and BRIDGES
Capacity 1000 Tons per Month. 3000 Tons in Stock

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The Largest Steel Fabricators in the Carolinas
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North Carolina
S. C. Rep., Edward McCrady, 307 Allen Bldg., Greenville, S. C.

Have It Galvanized by— Joseph P. Cattie & Bros., Inc. Gaul & Letterly Sts., Philadelphia, Pa.

Philadelphia's Oldest, The Country's Largest Hot Dip Job Galvanizer

Galvanized Products Furnished

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Railroads

Railroad Terminals Warehouses **CONTRACTING ENGINEERS**

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Industrial Plants
Sugar Mills
Power Plants, Dams,
Reservoirs, Pipe Lines,
Tanks.

More Foreign Trade **Opportunities**

(Continued from page 32)

two or three countries in the whole world whose foreign trade exceeds that or British Malaya. Of exports the United States takes nearly half, yet imports from this country are exceeded by almost a dozen other nations. German goods imported into British Malaya in 1936 totaled \$5,252,000. German goods exported to British Malaya in 1938 however, aggregated \$5,361,876. Among the latter were:

Cotton textiles	\$90,852
Silk, rayon and synthetic	
fibers	94,068
Paper and paper products	197,382
Glass and glassware	156,378
Coal tar dyes	86,028
Steel pipe	94,068
Iron shapes and bars	196,980
Iron sheets	351,750
Railway material	65,124
Copper bars, sheets, wire, etc.	68,742
Rubber products	133,062
Cutlery	75,174
Tools and agricultural imple-	
ments	102,510
Copper products	100,902
Machine tools	76,782
Power machinery	603,804
Pumps, compressors, etc	36,180
Food processing machinery.	58,692
Motor vehicles and aircraft	124,620
Bicycles	149,946
Electrotechnical products	184,116
Optical and precision instru-	
ments	150,348
Pharmaceuticals	274,566
Cosmetics	49,044
Musical instruments	57,486
	,

CANADA

While it is true that more than half of Canada's entire imports already are supplied by the United States, German goods have constituted, after the British Empire, the next largest amount. In 1937, Canadian imports of German goods aggregated \$11,983,000 and in 1938 German exports to Canada totaled \$10,333.812. The principal items among the latter

were:	
Raw materials	
Coal	1,992,714
Copper ore	
Semi manufactures	
Cotton yarn	59,094
Paraffin, stearin, oils and	
lubricants	93,264
Potassium salts	159,966
Manufactures	
Cotton textiles	87,234
Silk, rayon and synthetic	
fibers	182,106
Woolen textiles	47,838
Flax, hemp, jute, etc	41,004
Leather and leather goods	139,896
Paper and paper products	201,804
Glass and glassware	305,520
Synthetic chemicals	60,702
Coal tar dyes	839,778
Miscellaneous dyes, varnish	
and lacquer	106,128
Primary chemical products	604,206
Iron bars, shapes and wire	127,434
Copper bars, sheets and wire	74,370
Aluminum sheets and wire	55,878
Wood products	77.586

Rubber products	80,802
Clay, porcelain and stoneware	182,508
Cutlery	236,778
Tools and agricultural imple-	,
ments	194.160
Miscellaneous iron products.	267.732
Copper products	194,970
Machine tools	116,982
Textile and leather machin-	,
ery	159,192
Agricultural machinery	74,772
Power machinery	102,912
Paper and printing machinery	127,434
Motor vehicles and aircraft	50.652
Bicycles	112,962
Electrotechnical equipment	103,314
Watches and clocks	172,056
Optical and precision machin-	,
ery	433,758
Horn, etc. products	98,088
Pharmaceuticals	141,102
Musical instruments	185,322
Toys, etc	359,790
* *	,

EIRE

In 1937, when German goods imported into Eire totaled \$7,086,000, the United States ranked second among countries from which Eire received imports. At in that time United States goods amounted to more than double the value of German goods, but in 1938 German exports rose to \$11,683,326. Among the lat-

er were:	
Copper ore	\$51,456
Semi manufactures	
Cement	88,038
Potassium salts	45,828
Thomas phosphate	55,476
Manufactures	
Cotton textiles	147,936
Silk, rayon and synthetic	
fibers	147,936
Woolen textiles	57,486
Paper and paper products	228,336
Clay, porcelain and stone-	
ware	107,334
Glass and glassware	116,178
Cutlery	61,104
Coal tar dyes	40,200
Cast iron pipe, iron bars and	
shapes	108,942
Tools and agricultural imple-	
ments	52,662
Copper products	67,134
Machine tools	248,034
Textile and leather machin-	
ery	71,154
Agricultural machinery	60,300
Power machinery	182,508
Pumps and compressors	65,928
Food processing machinery.	95,274
Ships	6,093,114
Motor vehicles and aircraft.	89,646
Electrical machinery and	4 44 000
equipment	1,447,602
Watches and clocks	91,254
Optical and precision instru-	FO 000
ments	58,290 40,200
Pharmaceuticals	60,702
Musical instruments	125,424
Toys, etc.	120,424
NEW ZEALAND	

Imports of German goods into New Zealand in 1937 totaled \$3,861,000 in comparison with German exports to New Zealand amounting to \$3,218,814 in 1938. Among the latter, the principal items were:

Crude potassium salts Cotton textiles	\$104,118 95,274
Silk, rayon and synthetic fibers	332,152

188,538
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187,734

UNION OF SOUTH AFRICA

For a number of years Germany has been the third largest source of the Union of South Africa's imports and in 1937 imports from Germany totaled \$26,-024,000. In 1938 however, a substantial

24,000. In 1938 however, a s	ubstantial
ncrease occurred, for German	exports to
South Africa in that year am	
32,932,644 and included the	
Foodstuffs	\$129,846
Raw materials	62,310
Semi manufactures	,
Cotton yarn	58,692
Oils and lubricants	
Potassium salts	174,066
Phosphate (exclusive of	1.1,000
Thomas meal)	52,662
	02,002
Ianufactures	177 000
Cotton textiles	157,986
Silk, rayon and synthetic	
fibers	785,508
Woolen textiles	287,832
Leather and leather products	312,354
Paper and paper products Clay, porcelain and stone-	1,067,712
Clay, porcelain and stone-	
wares	308,736
wares	532,248
Coal tar dyes	108,540
Miscellaneous dyes,, varnish and lacquer	
and lacquer	156,379
Explosives and munitions Steel pipe Iron shapes and bars	618,678
Steel pipe	278,184
Iron shapes and bars	722,394
Iron sheets and wire	258,888
Railway materials	2,391,498
Wrought iron	1,190,322
Copper bars, sheets and wire	404,010
Wood products	139,092
Aluminum bars, sheets and	100,002
wire	118,992
wire Rubber products Cutlery	129,444
Cutlows	159,192
Tools and agricultural imple-	100,102
	308.736
ments	2,532,600
	2,002,000
Miscellaneous copper prod-	225,924
ucts	585,714
Machine tools	164,820
Textile and leather machinery	
Agricultural machinery	895,254
Steam locomotives Power machinery	5,087,712
Power machinery	513,354
Pumps, compressors and con-	050 050
veyors	272,958
Paper and printing machin-	
Food processing machinery.	356,574
	106,932
Miscellaneous machinery	987,714
Motor vehicles and aircraft.	3,532,776
Watches and clocks	138,690
Optical and precision instru-	
ments	498,480
Pharmaceuticals and photo-	
chemicals	481,191
Musical instruments	423,708

BUY ON QUALITY IT PAYS

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SIXTY TYPES AND SIZES

FLEXIBLE SHAFT MACHINES GROUND ROTARY CUTTERS



IT PAYS TO BUY THE BEST

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Spur Gears—½ in. to 30 ft. in diameter
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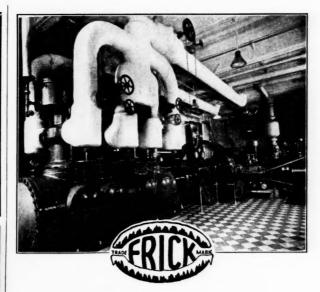


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Comes in big units, these days, as if reviving the large Frick machines of forty or fifty years ago. The compressors illus-



Frick Four-cylinder 12"
x 12" Compressor; one
of two at the Schmidt
Brewery, Philadelphia.

trated each have four cylinders of 12 inches bore and 12 inches stroke. That at the Pfeiffer Brewery in Detroit (shown above) is driven by a steam engine. Thetwomachines at Schmidt's Brewery, in Philadelphia (one of which appears at left) have direct-

connected synchronous motors. All carry varying loads with ease and convenience because equipped with Frick capacity control valves.

When you want dependable cooling, specify Frick Refrigeration. Used in over a hundred breweries. Let us quote on your needs now: write

WAYNESBORO, PENNA DEPENDABLE REFRIGERATION SINCE

New Industrial Plants and Expansions in the South During October, 1939

(Continued from page 58)

Charlotte, N. C	\$40,000	Brown Equipment Co.
Charlotte, N. C Warehouse		John Deere Plow Co.
Gastonia, N. C Mill addition		Parkdale Mills, Inc.
Plymouth, N. CPulp plant addition	1,000,000	
Pones City, OklaGasoline cracking plant	1,500,000	
Charleston, S. C Box Factory		
Drayton, S. C Opening room building		Drayton Mills
Greenville, S. CFactory		Greenville Manufacturing Co.
Greenville, S. CFactory		Southern Margerine Co.
Lyman, S. C	100,000	
Alcoa, Tenn		Aluminum Company of America
Chattanooga, Tenn	. 50,000	Dixie Mercerizing Co.
Englewood, Tenn		
Franklin, TennPhosphate plant		
Knoxville, Tenn		Standard Knitting Mill
Memphis, Tenn	********	
Nashville, TennAircraft Factory	250,000	Aviation Manufacturing Corp.
Austin, TexBottling plant	********	
TexasPipe line	40,000	
TexasGas line	07 000	Tidewater Seeboard Oil Co
Texas	80,000	
Liberty, TexCold storage plant	• • • • • • •	Cult Oil Company
Marble Falls, TexBulk oil station	• • • • • • •	Valley Pine Line Co
McAllen, Tex		Coronado Coro
Refugio, Tex Recycling plant		T T Stucker
San Antonio, Tex Laundry and dry cleaning Plant	07 000	
Waxahachie, TexPlant		
VirginiaTelephone plant, equipment	800,000	pany of Virginia
Front Royal, VaNew unit		
Lynchburg, Va	90,000	
Newport News, Va		Newport News Shipbuilding and Dry
Newport News, vaApprentice school	00,000	Dock Corp.
Roanoke, VaBottling plant		
South Boston, Va	1.000.000	
Winchester, VaAddition	2,000,000	O'Sullivan Rubber Co.
Wheeling, W. VaTextile unit		J. E. Stifel Co.

INDUSTRIAL NEWS

(Continued from page 47)

Roebling's New York Office

John A. Roebling's Sons Company, Trenton, N. J., announces the removal of its New York office from 107 Liberty Street to 19 Rector Street (Twentieth Floor). The company's New York warehouse remains at its present location, 169-175 Hudson Street.

U. S. Steel Export Company

Effective November 1, the name of the U. S. Steel Products Company, U. S. Steel Corporation export subsidiary, was changed to U. S. Steel Export Company, This change of name, it is thought, will indicate more clearly the business carried on by the company. The U. S. Steel Export Company does not manufacture any steel products itself, but is the sole export outlet for the vast line of products manufactured by the subsidiaries of the U. S. Steel Corporation for the use of manufacturing, agricultural, transportation and

construction industries. Its main office is at 30 Church Street, New York City, from which a world-wide business is directed through many branch offices, representatives and cor-respondence.

Equipment Order to Blaw-Knox

The Blaw-Knox Company of Pittsburgh, Pa., has been awarded contract by the Panama Canal Commission for equipment to be incorporated in nine new concrete mixing plants. This equipment will include portable bins and weighing batchers.



Another Example of Modernizing with SMITH-KAPLAN

Automatically Adjustable Blade Turbines!

Jackson Mills, Wellford, S. C., are using a 2500 h.p. Smith-Kaplan unit, installed three years ago at the above Mill, High Shoals, N. C. It has operated continuously and has generated power valued at thousands of dollars more than that obtainable with any other type of turbine under comparable river flow conditions.

This result is due to the construction of the runner which permits automatic adjustment of blades to accommodate varying flow conditions, resulting in high efficiency over a wide range of load and head, and greatly increased annual K.W.H. production.

Write us. Find out what "modernizing with Smith" can mean to you.



ayne service is not that simple! A Layne deep well water system must be and always is built to fulfill specific conditions. One well may have to be 600 feet deep, while another may need go only 90 feet deep. A four inch well may supply all the water you need, but on the other hand it may have to be sixty inches in diameter. There are many other factors that must be considered and properly cared for.

Layne enjoys the distinction of being the world's largest and most widely experienced

well water system developing organization. Thus qualified by experience and reptuation they are prepared to do the job complete: drill the wells of proper size and depth, case correctly to protect and prolong your water supply, install the right kind and size of pumps and set motors and control apparatus. In brief, they deliver your well water system complete, tested and in operation, producing the required amount, or in excess of your water needs.

AFFILIATED COMPANIES
LAYNE-ARKANSAS CO.. STUTTGART, ARK.
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LAYNE-CENTRAL CO... MEMPHIS. TENN.

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LAYNE-TEXAS CO.

Send for bulletins which more fully explain this outstanding service. They may be obtained free. Address

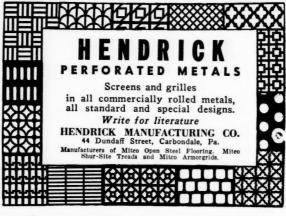
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PUMPS & WELL WATER SYSTEMS

For Municipalities, Industries, Railroads, Mines and Irrigation









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West Virginia's Navigable Waterways

(Continued from page 50)

Hatfield Campbell Creek Coal Co., Cincinnati, OhioTimber crib and steel structure. Belt conveyor and loading boom for delivery to barges. Plymouth, W. Va.
Raymond City Coal & Transportation Corp.,
Cincinnati, Ohio
Hatfield Campbell Creek Coal Co., Cincinnati, Ohio Concrete and steel structure with pan delivery to barges. Reed, W. Va.
Carbon Fuel Company, Charleston, W. Va
Winifrede Collieries, Winifrede, W. Va
Riverview Coal Mining Co., Coalburg, W. Va
Kanawha By-Products Coal Co., Charleston, W. Va Timber crib and steel structure belt conveyor and loading chute for delivery from mine car to barges, Monarch, W. Va.
Cedar Grove Collieries, Cedar Grove, W. Va
Kelleys Creek Colliery Co., Ward, W. Va
Riverton Coal Company, Crownhill, W. Va
Kanawha & New River Barge & Rail Mines, Inc.,
Crown Hill, W. Va
Kanawha Coals, Inc., Hugheston, W. Va
Kanawha & Hocking Coal & Coke Co., Longacre, W. Va Timber crib and frame structure with loading boom for delivery to barges. Longacre, W. Va.
Eagle Collieries, Inc., Charleston, W. Va
Semet Solvay Co., Inc., Montgomery, W. VaTimber crib and steel structure belt conveyor for delivery from mine car to barges. Harewood, W. Va.

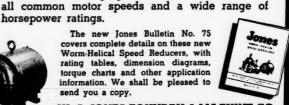


cal Speed Reducer on a lacquer agitator is typical of the wide range of services for which these drives can be used such as ore coasters, pulp tank mix-ers, furnaces, bending rolls and similar appli-



The new Iones Bulletin No. 75 covers complete details on these new Worm-Helical Speed Reducers, with rating tables, dimension diagrams, torque charts and other application information. We shall be pleased to send you a copy.

service. As a result of that experience a complete standard line has been developed covering 15 standard ratios ranging from 40 to 1 to 250 to 1 for



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HERRINGBONE-WORM-SPUR-GEAR SPEED REDUCERS . PULLEYS CUT AND MOLDED TOOTH GEARS . V-BELT SHEAVES . ANTI-FRICTION PILLOW BLOCKS . FRICTION CLUTCHES . TRANSMISSION APPLIANCES

SCREW MACHINE PARTS

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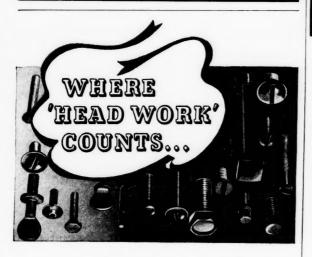




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Alert buyers intent on procuring better fastening devices at a saving are discovering that PRO-GRESSIVE screws and headed parts - formed accurately and economically by the cold upset process-are a considerable factor in keeping production costs down and profits up. You will find it worth while to submit your problems to PROGRESSIVE experts who specialize in made to order items requiring special heads, threads or finishes. Address your inquiry to:



Today Myers brings you the most modern, the most dependable double acting cylinders on the market. There is nothing experimental about them. Designed by experts, built to precision standards, their reputation for dependable and economical service is firmly established in pump circles the country

Whether conditions are regular or otherwise, Myers Double Acting Cylinders satisfactorily solve most deep well pumping problems. They furnish the plus volume of water that lowers pumping costs and satisfies the most critical of users.

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PUMPS-WATER SYSTEMS-HAY TOOLS-DOOR HANGERS

R

Naval Stores Operations in the South

(Continued from page 28)

terpene hydrocarbons derived from the crude turpentine are separated and used as one of the essential raw materials for the manufacture of "Petrex," a synthetic resin base developed by company chemists. Other fractions find application in the reclaiming of rubber, for solvents, and in disinfectants. More recently the preparation of high-grade alpha-pinene for the manufacture of synthetic camphor has been accomplished.

Pine oil has been similarly improved

by means of fractionation and changes in plant processing. Special pine oils are now available with superior color, odor, and other characteristics as required by various consuming industries. Highquality alpha-terpineol is now obtained by fractionation and chemical treatment. Special pine oils, high in terpene alcohols, find use in numerous industries.

Rosin Developments

The development of a process for the manufacture of pale grades of wood rosin is one of the outstanding achievements of Hercules chemists. By means of differential solvents, this pale rosin was produced which was superior to the old

grade of rosin once thought to be the best obtainable from wood. This process is particularly interesting because it is believed to be the first application of the principle of differential solution to the purification of low-price chemically intricate materials. This new wood rosin was not only pale in color, but was devoid of many other defects which had previously limited the market for that product. Contrary to the old wood rosins, these pale grades actually bleach upon heating.

With the development of this process of making pale wood came the production of a dark resin known as "Belro."
More recently the perfection of a process for manufacturing hydrogenated rosin was accomplished after years of research. This product is far superior to rosin in resistance to oxidation, retention of color, and chemical stability. It is going into fields where rosin is not employed and is thus further extending the market for naval stores.

Personnel Relations

In personnel relations work the company has also made progress. One phase of this activity included the housing of woods crews.

It should be remembered that these camps have to be movable, and that in no case can they become permanent camp sites. Busses transport the men to work and their children to schools. Camp cottages are provided with running water and electric lights, and many have bath and toilet facilities. The rent for these houses is at the monthly rate of \$2.00 a room or \$8.00 for a four-room cottage.

Medical service is provided for each man and his family at \$2.00 a month. This service has been available for ten years.

Economical group accident and sickness insurance is offered to all employes and 82 per cent of the woods camps personnel have subscribed. Life insurance is similarly provided and subscribed to by 20 per cent of the employes on wages.

Bringing industrial activities into such agricultural districts presented many problems. Turnover is a major labor problem in the southern areas where we operate, but even in the woods camps which often are moved from place to place, 48 per cent of the camp personnel have service records of five years or more.

Looking Ahead

Hercules Powder Company looks forward with enthusiasm to the future of wood naval stores. With twenty years of experience and intensive research behind it, the company is in an excellent position to continue its utilization of one of nature's cheapest sources of organic acids and aromatic hydrocarbons. From these bases it expects to produce additional terpene and rosin derivatives, "tailor-made" for industrial uses.

KEEP YOUR AISLES OPEN!



Elwell-Parker Systems—Correctly-Designed Trucks, Suitable Attachments, and a Sound Operating Plan—Will Liberate Your Aisles, Create Permanent Cost-Reductions

High-production machines are running at top capacity. Volume loads of materials are brought up, processed, speeded along. Aisles are busy but open to traffic—thanks to this well-planned, Elwell-Parker System of Material Handling.

You too can enlarge and clear your own aisleways—even in older buildings! Load materials on pallets or skids and keep them there throughout processing. Transport them in mass volume, speedily, safely, cheaply, by Elwell-Parker Trucks, Tractors or Cranes of suitable design for your especial needs.

When not immediately needed, clear your aisles by rushing loads away on Elwell-Parkers. Store where most convenient—save floor-space by hightiering to roof. Speed them back to the next process whenever you wish—hours or weeks afterward.

Whatever your industry, long-experienced Elwell-Parker Engineers will gladly help you find ways to eliminate waste, save money. Telephone, wire or write—today.

The Elwell-Parker Electric Company, 4238 St. Clair Avenue, Cleveland, Ohio.

ELWELL-PARKER Power Industrial TRUCKS



Keep your conveyor belts going with





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e FLEXCO H D nip-PLATES are used in re-pairing rips and patch-ing conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.



• FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Five sizes in steel and alloys.

FLEXIBLE STEEL LACING COMPANY



life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

Folder WRP shows ex-actly how to make tight butt joints in conveyor belts with Flexco HD Belt Fasteners. Also illustrates step by step the latest practice in repairing rips and putting in

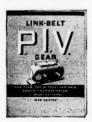
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POSITIVE INFINITELY VARIABLE SPEED CONTROL

Now Available in Smaller Sizes



• Industry can now make even broader application of P.I.V. Gear variable speed control benefits. Two new small sizes, ½ H.P. for speed ratios of 2 to 1 and 3 to 1, and 1½ H.P. for ratios of 2 to 1, 3 to 1 and 4 to 1, added to the present five sizes, meet a widespread demand that has developed in every industry, due to the many speed control problems which have been solved by this unique speed variator. The range of sizes now extends from ½ to 15 H.P. Ask for Book No. 1574 (1939 Edition).

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McLANAHAN EQUIPMENT

CRUSHERS

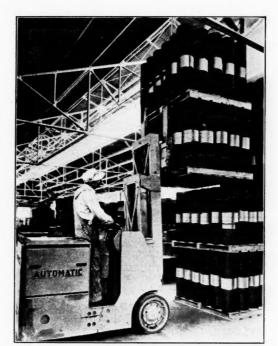
Single and double roll and jaw crushers, hammer mills, super dry pansestel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs,

SCREENS

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



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Since the first of this year, when "AUTOMATIC" announced this New Genter Control Fork Truck . . "For Universal application to every Industry," many NEW USERS have installed these New "AUTO-MATICS" as their materials handling systems . . . Many OLD USERS and CUSTOMERS have replaced their present methods of handling to accommodate these New "AUTOMATICS" . . .

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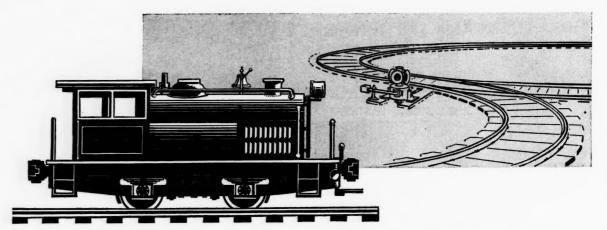
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SUBSIDIARY OF THE BALDWIN LOCOMOTIVE WORKS

Revival of Shipbuilding at Tampa, Florida

(Continued from page 29)

ways, but is contemplating construction of two more in the near future so construction on four vessels can go ahead at once.

A remarkable thing about its first year's operation is the fact that most of its labor, skilled and unskilled, was obtained locally, with less than ten percent of it coming from other shipbuilding centers.

Its employment of 1,400 men in year around work made a considerable dent in local relief rolls, and had an uplifting effect on business generally.

Tampa business men have called its operation—the largest single industrial operation in Florida—the impetus that has swung the business curve there in an upward direction.

On the heels of revived shipbuilding in Tampa came the army's new southeastern air base to be completed next April, three big federal housing projects, a new national Spanish-American war memorial, new citrus canning plants and a contemplated expansion of commercial aviation facilities, all calling for the expenditure of more than \$30,000.000.

The Tampa Shipbuilding and Engineering Company has built its facilities with a view to permanency, anticipating a program that will continue for ten years, at least, as the Maritime Commission retires more and more obsolete vessels, and builds new ones.

The Company was founded in 1892 by the Kreher brothers—Ernest, Max and Paul—as a foundry and machine shop, and in 1905 they expanded into the Tampa Foundry and Machine company which was ready, when the World War came, to grow into the Tampa Shipbuilding and Engineering Company.

The brothers were ready again in 1937 when the Maritime Commission launched its greatest peace time shipbuilding program in history. The Company's record of efficiency during the World War probably was a factor in the acceptance of the

first two bids they submitted to the Commission, one for four ships and another for five.

Vessels under construction now are of the C-2 type, 459-foot motorships, 63 feet in breadth, with a load draft of 25% feet, a displacement of 13,900 tons, a dead weight of 9,291 tons, and a cruising radius of 13,000 miles. They will be Diesel powered.

The vessels will have all the latest improvements in construction and arrangements of machinery, the national defense features which are required by law, and commodious accommodations for both officers and men. All quarters will be located amidships and occupancy of single rooms will be limited to four. Each ship will carry a crew of 42 men.

The first vessel to be launched has been assigned to the American Pioneer line and named Sea Witch after a famous American Clipper ship. The other three vessels of the first contract also will bear names of the early American sailing ships—Shooting Star, Surprise and Sweenstakes.



A Mess of Pottage

(Continued from page 34)

authority told the story of three men. One had five talents, another two, another one. The man with the five doubled them; the man with two doubled them; the man with one had no ambition, did not like work, had a bad opinion of others, wanted his mess of pottage without digding for it, and so the sense of fear took possession of him and he hid his talent and went on a sit-down strike.

A good business man can often make money in a depression while a poor business man piles up debts in days of prosperity.

Whenever and wherever the thrifty class has been in charge, debts have been reduced, idle men put to work, and assets increased throughout the country.

On the other hand, when theorists have been put in the saddle and good, hardheaded business sense retired, debts have piled up, idlers have increased, graft has grown and business sent to either the poorhouse, hospital or graveyard.

But even if you had the biggest business man in the United States in authority, this country has no one man who is big enough to direct the business of the nation.

Adolf Hitler in Mein Kampf claims that all the authority and responsibility should be on one man. I do not believe this will work successfully even with a dictator. I know it will stifle and ultimately destroy individual initiative in a democracy.

We need the best brains from the best (Continued on page 66)



1939

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